

PRIX EDITIONS

International Formula One Monthly



THE MAGAZINE FOR
GRAND PRIX PEOPLE

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MAY 1990

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*Car, March 1990



know how.

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International Formula One Monthly

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Stuart Sykes

Assistant Editor (U.K.)
Timothy Collings

Art and Design
Emma Angas

Commercial Director
Geoff Wootton

Production
Jerry Miners

Editor's Assistant
Claire Clarke

Advertising Managers
U.K.: Nigel Bellwood
(Cremen Ltd.), and Sharon King
(01) 540 2396
Australia: Virginia Herring
(08) 373 0500

Marketing Consultants
Young Resources, Adelaide

Subscriptions Managers
U.K.: Teresa Dohoney
(01) 540 2396
Australia: Marnie Lewis
(08) 373 0500

Publishers
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Wimbledon SW19 2SE
(01) 540 2396
Australia: First Frost Pty. Ltd.
102 Greenhill Road
Unley S.A. 5061
(08) 373 0500

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Australia: Gordon & Gotch,
Sydney

Principal Photographers
Steven Tee, LAT, Pascal Ron-
deau, Allsport, Dominique
Leroy

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**ON SALE
MAY 28th**

"You can feel the pulse of city starting to quicken", said South Australia's Premier John Bannon at the launch of ticket sales for the 1990 Adelaide Grand Prix - and that was nearly eight months ahead of the November date! Was anybody in Phoenix listening? With a brand-new slogan and a familiar brand of professionalism, the 1990 Aussie race the 500th in the history of the World Championship - was presented to the public on March 21. Over to Australian Grand Prix Publicity Manager Mike Drewer:

"Australia won't get a Grand Prix, let alone Adelaide'. The words of triple World Champion Sir Jack Brabham shortly before South Australia's capital city hosted its first event in 1985. Sir Jack was delighted to have been wrong, and Adelaide 1990 will please him even more as his youngest son David is likely to be taking part - in the team his famous father founded.

Our first Grand Prix received an enormous boost through the presence of 1980 World Champion Alan Jones - another Aussie - so the prospect of

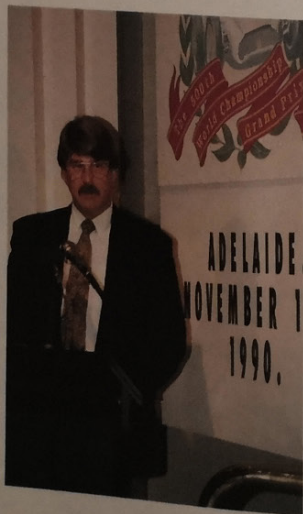
Streets Ahead: Adelaide hosts the 500th



having Brabham back is a promoter's dream. That this should happen in the year that Adelaide hosts the 500th World Championship event makes the 1990 Foster's Australian Grand Prix a very special event indeed.

Grand Prix Executive Director Mal Hemmerling and the rest of the team are already planning an event to eclipse our previous efforts: a four-day programme of spectacular racing supplemented by displays of cars representing the 40 years of the World Championship, along with a number of changes to circuit facilities to benefit both spectators and competitors.

The pit building is to be increased in size to create more room for the Formula 1 teams, and facilities within the general admission area will also



be improved for the paying public. Tickets to the 1990 Adelaide event have gone on sale, with the four-day general admission pass remaining at last year's level of A\$65.00. Gold, silver and bronze fourday grandstand passes show a small increase of \$5.00, priced respectively at A\$220.00, A\$155.00 and A\$105.00.

In addition to our new "Roar Energy" slogan - as Mal Hemmerling said, "Adelaide Alive" has become part of the international language - a special 500th Grand Prix logo has been designed for use on selected Grand Prix merchandise. For the enthusiasts, 1990 Foster's Australian Grand Prix posters and T-shirts are available from the:

Australian Formula One
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134 Fullarton Road,
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or by ringing 08 223 1111.

The link between the first World Championship event held at Silverstone in 1950 and the 500th race to be staged in Adelaide as the last race of the 1990 season has been further strengthened by the announcement that Foster's will also sponsor this year's British Grand Prix.

Another change for 1990 concerns the official Australian Grand Prix programme. To be published by Prix Editions, it will be a super issue to celebrate the 500th World Championship race."

As John Bannon concluded, "They know we can do it every year to the highest standard - why should they want to move it anywhere else?" Point taken - except in Phoenix...

Dr. Mal Hemmerling launches Adelaide's 1990 campaign

POLE POSITION

The Editor's Page

"Funny place to start the season", complains Thierry Boutsen elsewhere in this issue as his new column looks back on the first Grand Prix of the 1990s. If Phoenix was funny, Brazil was no joke: muck and bullets would seem to be an appropriate summing-up, with facilities part-finished and Grand Prix people coming under violent threat.

After a season of spitefulness and a winter of disharmony, what was Formula One doing going to two such places to begin its brave new decade? There could hardly have been a more low-key place to go than Phoenix: though it can hardly be blamed on the locals, the fact that it rained - in the desert! - simply seemed to put the cap on a drastically downbeat event. Where, in the land of hype and dollars, was the promotion, the pomp and circumstance, the pitch to a notoriously apathetic public? Being in Phoenix mere minutes after the first Grand Prix of the season was like being in an Arizona ghost town. Surely it is obvious to all concerned that the future of Formula One in the States - if it has one at all - must lie, not in some quickly cobbled-together circuit full of right angles and wrong ideas, but in a permanent road circuit akin to the former venue at Watkins Glen. Someone, clearly, has to get his ideas together, or Phoenix will go the way of Long Beach, Dallas, Detroit and the Las Vegas car park before it.

And so to Brazil: it seems even the dollar-happy denizens of the Grand Prix world were unable to lay their hands on readies during a stay that saw a change of presidency (sadly, only in Brazil) and exposed the F1 faithful to fearful threats of violence that even ritzy Rio has never been able to match. Never has the contrast in two worlds been so flagrant: while it was marvellous to see those grandstands packed with ardent admirers, the memory of what it cost them actu-

ally to be there should linger long with all who were glad to get away.

Oh yes, and there was some racing as well. Right thankful we should be, too, for the Alesi and Nakajimas of this world. Alesi, for the fight he showed against the odds in Phoenix; Nakajima, for unwittingly provoking the incident that brought the Brazilian Grand Prix alive - and with it the rest of the season. Grateful, too, for the simple honesty the Japanese displayed in accounting for the incident

afterwards, helping to some extent to dispel the persistent doubts about the flawed genius of Ayrton Senna. At least Brazil demonstrated that no-one has a divine right to win every race.

And now, even more thankfully, for Imola: the true start of the season, the return to Europe and the arrival of the bulk of the new season's racers. Not that this column wishes to sound xenophobic in any way. To be a genuine World Championship, Formula One has to be truly international. But there must be better places than Brazil to go, and where street circuits are concerned the almost simultaneous announcement of Adelaide's 1990 "Roar Energy" promotional campaign reminded us that there is, after all, a far-flung town that's worth all the effort it takes to get there.

Shawn Sykes

Flawed genius? Brazil has still to prove a good place for Senna to race, too



(Ayrton Senna racing)

(Phoenix Grand Prix)

KEEPING TRACK

Glas - handle with care

A new F1 team will be unveiled at the San Marino Grand Prix. Designed and built in Italy, but financed with Mexican money, the Glas-Lamborghini will be officially baptised first in Italy and then in Mexico in readiness for joining in the 1991 World Championship. Motivator and main financial prop of the new team is Fernando Gonzales Luna, heir to a banking, construction and hotel dynasty in Mexico. A former kart driver himself, he is mounting a Formula 1 challenge, he says, to bring back the enthusiasm felt in his country when the Rodriguez brothers were racing.

To achieve this he has turned to one of the most successful men in F1, Mauro Forghieri, former Ferrari genius who recently built the V12 Lamborghini engine now powering the Lotus and Larrousse cars. "Not very revolutionary, just a traditional design", says Forghieri of the new car.

Gonzales Luna has promised a three-year involvement in Glas, together with partners Fauro Aloï, an Italian living in Canada, and Carlo Patrucci, who was involved in Brabham and tried unsuccessfully to buy Lola last year. One of the drivers will be Giovanni Aloï, a Mexican currently competing in F3000. The other car is earmarked for an Italian; this year's testing will be handled by Mauro Baldi.



Silverstone set for the Nineties

Silverstone has revealed details of the major changes to the birthplace of the World Championship. Planned to take effect in time for the 1991 British Grand Prix, track alterations have been designed in consultation with both FISA and FOCA. There are 14 changes in all, taking Silverstone from 2.975 miles/4.788 kms to 3.2 miles/5.2 kms. A new five-

corner section will be created at Woodcote, just one spot where major earthworks will add new contours and spectator interest. Becketts, the fast right-hander, will become an elongated series of esses, with Stowe and Club corners slowed by new turns and dips. Silverstone's reward for this Pds 2m investment is the British GP contract to 1996.

Norman Howell



One door closes...

As we went to press the termination of Gary Brabham's brief love affair with Life Racing was announced. After failing to pre-qualify in either of the first two rounds, Gary cited "contract problems" as the reason for his decision to revert to F3000. But simultaneously his younger brother David was confirmed as a Brabham driver with effect from the forthcoming San Marino Grand Prix, retaining Australian interest in the season, and taking Sir Jack's son into a much more stable F1 environment - despite the Brabham traumas detailed elsewhere in this issue. Gregor Foitek, meanwhile, after losing out on the Brabham seat despite his father's influence there, was not confirmed as an Onyx driver, with Scandinavian pairing Stefan Johansson and JJ Lehto retained by the British outfit.

Test and try

McLaren and Honda plan an intense testing program in 1990. In addition to regular drivers Senna and Gerhard Berger, Jonathan Palmer, Allan McNish and another driver yet to be nominated will work with the team. Benetton Ford, meanwhile, will do all its testing with only its two regular drivers Nelson Piquet and Alessandro Nannini.

Palmer (left); one of three regular test drivers for McLaren

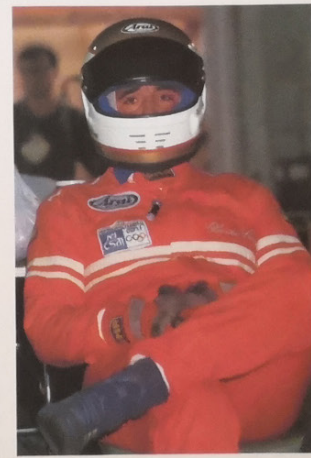


Any number - as long as it's 12?

A Ford V12 engine is not already under construction as has been rumoured in some circles. But never say never. Ford and Cosworth are constantly evaluating their engine program and that includes the possibility of a V12. "The Ford Formula One program is extremely flexible in regard to the number of cylinders," Ford's racing boss Michael Kranefuss said.

Little and Large

When the 1990 drivers weighed in wearing overalls and helmets in Phoenix, Coloni distinguished itself by having the lightest - Roberto Moreno (left) - and heaviest - Claudio Langes. Moreno tipped the scales at a tiny 58 kilos, Langes at a heavy weight 86.



Ongoing Onyx

Automobile Monteverdi, a Swiss company that used to build exotic cars, has bought the Onyx team from Jean-Pierre van Rossem via the Middlebridge Group (the owners of Brabham) who acted as a middleman. Van Rossem had grown disenchanted with Formula One and also had financial problems involving his company Moneytron. Stefan Johansson and JJ Lehto will continue to drive for the team. Original Onyx founders Mike Earle and Joe Chamberlain are back with the team in management roles. There had been considerable friction in the team with designer Alan Jenkins, Stefan Johansson and others on one side and Earle and Chamberlain on the other. Now that the latter two are back, the team is trying to settle down and try again.

By Dan Knutson and Tim Collings

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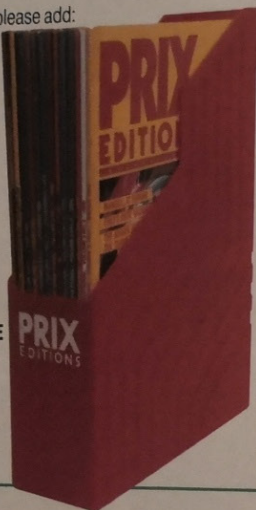
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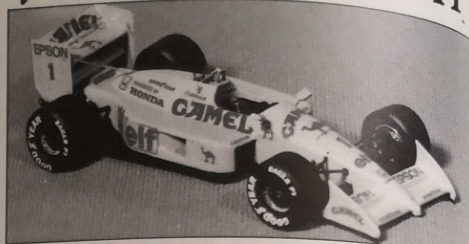
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THIS MONTH'S NON QUOTE

'SENNA HAS NEW NOSE JOB IN BRAZIL' (sic)

Have we seen the end of the US Grand Prix? Certainly, at Phoenix, it could hardly have been called alive and well. Estimates vary but 15,000 would seem to be a generous crowd figure. And, this time, the organisers could scarcely blame the heat, the excuse which was proffered on our first visit. On the Monday after this year's race, a local radio station held a phone-in to canvass opinion on Grand Prix racing coming to town.

"Too expensive," said one caller. So what's new? That argument seems to crop up no matter where we go. "Didn't know about it," said another. "Yeah," chimed in a third, "there was zero information on what you would get for your money, how much you would see from your seat, how you would get there."

A local problem then? Not quite. 'USA Today', one of the few national newspapers, carried but a brief report at the bottom of a page (totally wasting the services of an informed writer in the process) while the sports news on television didn't mention it. I mean, we are talking about the United States Grand Prix. When was the last time the denizens of that God-fearing country missed an opportunity to beat their collective chests? Clearly, they felt the goings on in Phoenix didn't give them much to shout about.

The city itself was dead; like Milton Keynes on a wet Sunday. Not a poster to be seen; only the occasional piece of bunting hung forlornly in a shop window as the merchant tried to drum up trade. And, an hour or so after the race, there was hardly a soul to be seen on the streets. It was as though the race had been run somewhere else. So, the Americans are not interested in Formula One.

Well, not quite. That was certainly not the case at Long Beach. Or Watkins Glen. Or even Detroit.

Okay, so the circuit at Detroit had its shortcomings but you knew you were at a motor race of some note. Agreed, it was like a zoo in the nearby Westin Hotel; questionable music thumping around the cavernous concrete architecture which the management happily referred to as The Lobby; the six lifts constantly decanting folk intent on pursuing the act of "partying" with an enthusiasm which they felt should

ON THE OTHER HAND



THE
MAURICE HAMILTON
COLUMN

embrace all of mankind. Don't ask them who won the race. But they knew they were having a good time. Probably because they kept saying so. But, like it or not, you were at An Event.

It was the same at Long Beach, the original layout being the best street circuit I have ever seen. Chris Pook, the energetic organiser, was everywhere; cajoling, arguing, checking, looking, talking, overseeing, constantly searching for improvement. You may not have approved of his brash methods, but you sure as hell knew he was there.

I have no idea who the figurehead was at Phoenix. I did not see anyone motivating the troops. And, if they couldn't manage that, what hope was there for the people who actually lived and worked in downtown Phoenix?

Pook had the right idea. He made the inhabitants of Long Beach part of the event. There would be a Concours d'Elegance. For charity. A shrewd move that. Not only could you show off your automotive pride and joy but the event was also serving the community.

Then there was a Charity Chilli Cook-Off in the parking lot by the Queen Mary. Frankly, it sounds dreadful and I don't know anyone from racing who actually attended but that is not the point. The local people were there. So were members of the "Committee of 300", a non-profit civic organisation devoting time, money and talent to community activities connected with the Grand Prix. These people, 300 in all, would be decked out in red blazers, name badges to the fore, proudly mingling and showing acceptable oneupmanship, U.S.-style. Not your cup of tea, maybe. But it worked.

Then they ran an Arts show down by the Harbour and a "Prix-view" luncheon in the Convention Centre. And all of this was before a racing car had so much as turned a wheel. The locals were straining at the leash by the time practice started. And, for those who could not handle the noise, there were coach trips to somewhere more peaceful. Interestingly, the number of coaches dwindled rapidly as word of the spectacle spread and the inhabitants decided to stay and watch.

A crowd figure of 80,000 was not uncommon. And most of them would be swept along by the Californian euphoria of the day. There was, for instance, a memorable moment down by the Queens Hairpin just before the start of the race in 1980. It was hot and the natives were becoming restless. Onto the track stepped a statuesque lady of impressive proportions. Lifting the front of her tee-shirt, she played to each packed grandstand in turn. Her beer-stained audience really liked that. She had plenty of support that day and you have to say that none of it was artificial.



Yo world - where was the home crowd?

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Molown - at least there was no lack of hype
Downtown Dallas: all corn and concrete



And, after the race, the same atmosphere pervaded for some time in and around the motor homes in the paddock and public enclosures. Horizontal entertainment was a common feature. Or so I'm told.

Then there was Watkins Glen, a reasonable road circuit in the very attractive Finger Lake region of New York State. Or, at least, it would have been attractive had it been any time other than October, the once traditional date for the U.S. Grand Prix.

I must admit, the Grand Prix in 1979 was a total mess, heavy rain having turned the paddock, spectator enclosures and access roads into a quagmire. Not ideal territory for Corporate Guests, a phenomenon not fully exploited in the late Seventies but, seemingly, second in line after television in the Nineties.

The problem is, where do we go next? Who will have us?

I'm told the guests in the hospitality suites had an excellent time in Phoenix this year. I don't doubt it for a minute and I'm very pleased for them. Maybe we should follow the example of Wimbledon, where many of the hospitality areas are sited across the road with television sets on hand should guests feel incapable of leaving the bar and the feeding trough. That way the motorsport guests could gather in air-conditioned splendour in Phoenix while we attend the race some place else.

Getting back to Watkins Glen, it was hardly Gucci and Balenciaga. Indeed, the year it rained there was trouble down in the town when the visitors took it upon themselves to invade the launderette, strip off and dry their clothes. The Sheriff had to be called in to sort out the ensuing unpleasantness as locals tried to launder their smalls against a backdrop of arguing, shivering, semi-naked visitors.

That aside, "The Glen" was a very pleasant place to be. The locals threw themselves wholeheartedly into the event - their event. The Chamber of Commerce enlisted the help of the townsfolk when it came to providing rooms. You simply called the office, received a name and address and went off to share life with a family for the

weekend. And the room rate was fixed by the Chamber of Commerce. Rip-off was there none.

You could always eat out at places such as the Seneca Lodge, a timber chalet on the outside and a whoopin' and hollerin' bear pit of a place on the inside. You could dig lumps out of the atmosphere with a blunt bottle opener.

I can remember clearly, well fairly clearly, the night James Hunt won the race to establish his late challenge for the 1976 title. It had been a long hard weekend and he was tired. And a little emotional. To prove it, he was wandering around the place wearing a road-worker's protective hat with a flashing orange lamp mounted on the top. That reminds me, I must have missed Ayrton's knees-up this year in the lobby of the Phoenix Sheraton.

Times have changed and it's no good harking back to the Good Old Days. I appreciate that. But it seems to me that there is something missing, something terribly wrong, if Phoenix is the state of Formula One, U.S.-style.

Grand Prix racing's record is not exactly enviable in North America. There was the fiasco in Dallas in 1984 and, sadly, that was an unfair reflection of the event's potential in Texas. The circuit was interesting and managed to avoid the constant ninety degree turns which strangle Phoenix to death. Yes, the track surface broke up in Dallas but that can always be fixed.

There was a good deal of community spirit and the presence of most of the cast from "Dallas" added a certain credibility to the event. Indeed, the sight of Manfred Winkelhock vacating his car so that he could climb the starter's rostrum and shake hands with 'JR' was one of Grand Prix racing's more memorable sights that weekend. The fact that the race eventually ended with problems over finance was the last thing Grand Prix racing needed even though the fiscal problems had little to do with Formula One itself.

Then there was Las Vegas. Yes, well, the least said the better. Las Vegas is the sort of place everyone should see once. Then you will know not to go again. The circuit was a joke but, given the tools provided - a flat piece of land and miles of pre-cast concrete walls - they had little alternative.

The disinterest of the locals was overwhelming. For the teams, the highlight was having the likes of Diana Ross, Tom Jones and Sammy Davis Junior on tap, as it were. The rest was endless rows of money-consuming machines operated for hours on end by mindless morons. And I'm not



Long Beach: well promoted, and supervised by a royal lady



Will Phoenix catch fire in time?

referring to the Grand Prix cars and their drivers.

Phoenix, at least, was devoid of tinsel and glitter. But, judging by this year's race, its future as a Grand Prix venue must be limited. The problem is, where do we go next? Who will have us? Who wants to see cars struggling in second gear and lapping at an average of 90mph? The image is not good. And, on the evidence of the telecast, Formula One is not best served by the ESPN in the United States. David Hobbs apart, the commentary was lamentable; it made Murray sound like Alistair Cooke.

The production was woeful. Four times commercial breaks intervened

just as you could see something was about to happen on the track. Heaven knows, incidents in Formula One are few and far between these days without having them blacked out by the sincere call for dog-owners to use 'vitamin enriched morsels which will bring vitality and put a shine on his coat and a twinkle in his eye'. Quite what it will do for the dog they didn't explain.

Actually, there would seem to be a moral there for Grand Prix racing in the United States. As any dog will tell you, tripe can be very nice, particularly if presented properly. But if you dump it in a forgotten corner, it tends to stink after a while.

(Alamy)

(Alamy)

A NEW MAN

Alain Prost says the move to Ferrari has made him a new man. When he left McLaren he also left the feud with Ayrton Senna behind. Prost has found fresh motivation at Ferrari. He's getting used to the semi-automatic gearbox, and has been working with the team to find the horsepower needed to bring the Ferrari V12 on par with the superior Honda V10. Before the Phoenix Grand Prix Prost talked about Ferrari:

"When I joined Ferrari in July," Prost said, "I was not sure that the car could be competitive. But we worked very hard together. I enjoy being at Ferrari because it's something different. And after 10 years of Formula One I need something different. I am a new man...but the most important thing is that I have a new motivation this season."

"I must say that I was a bit surprised when I drove the car for the first time. It was very easy to shift up but very difficult for me to shift down. So I had some problems. Through the testing it got better. Now I can say that I use the gearbox maybe 90/95 percent. I still think it's not 100 percent. But I need to race, to push for two hours."

"For me the biggest difference compared to the McLaren is the fact that you don't care about the gear lever position. The comfort is better. You can sit exactly where you want. Because I am small I have had a problem in the last few years because I was obliged to sit very close to the steering wheel. I had a big problem with the gear lever: I had to bend my arm too much."

"When I drove the (1989) Ferrari the first time at Fiorano I must say that the car was much slower than the Honda engine. Even more than the power difference was the fact that the engine was not very progressive. It was not easy to drive at low revs. Now I can say that...it is quite close to the Honda. Except I don't know how much power (Honda) now has compared to 1989."

"I think I brought a lot of information to Ferrari, especially on the engine side and the chassis side. In fact, to be honest, the first thing I said before I signed the contract (with Ferrari last year) was that I know the car we have at McLaren and know more or less the power you (Ferrari) have. So the only way I can sign the contract for 1990 is if you stop development on the '89 season and concentrate on the '90 season. Because that is the only

way you are going to compete with Honda in 1990."

BLACK OUT?

Formula One cars have taken another step closer to jet fighters: G forces are getting so high that the drivers might lose consciousness.

"The cars are going very fast around some corners," Ayrton Senna explained, "and the grip we have is so



Talking Points

high that at some places it is physically starting to get difficult for you to cope with the G force. That wasn't the case here in Phoenix, a street circuit. But we will find those problems during the year as we go along. At some particular circuits I'm sure we will find a big problem."

Gerhard Berger agrees: "The cars are quicker than last year," the McLaren driver said, "and most of the speed increase comes in the corners. The G forces are very high, and it's physically very hard to drive on the limit. You can't go quicker even if the car could go quicker."

Could a driver black out because of the high G forces?

"Yes," said Senna, "We are already having some indications of problems. It's now more than ever up to the driver to know where to back off, not to exceed your body limits."

Honda's helmet company Rhos has built Senna a helmet that is 100 grams lighter than the Bell Senna used to wear. It doesn't sound like a great weight saving, but, when multiplied by a G force of 5, Senna says it really makes a difference.

What about changing the rules? "I have never heard a driver complain that the car is too quick!" says McLaren's Ron Dennis. "But if this does become a problem, we might need to change the rules."

THE WINTER OF NO COMMENT

"The winter of no comment." That's how Marlboro McLaren Honda director Ron Dennis described the off-season which saw McLaren and Senna fight a bitter battle against Formula One's sanctioning body FISA and its president Jean-Marie Balestre.

"It was a difficult period for us," Dennis said. "The problems could have created a weakness in the company or be a motivating force. We believe we are a stronger team than ever. Hopefully we can now get on with our motor racing."

But, while FISA won the battle by forcing Senna to retract his statements that FISA "manipulated" the outcome of the 1989 world championship, the war is not over. "We still have a strong conviction on how Formula One should be run," Dennis said.

Asked if he still is considering taking matters to the French civil courts, Dennis said, "I can't give you a straight yes or no. I think we will always take the course which is best for the sport."

Dennis and Senna said that nobody "won" in this messy affair. "I have not given up at the last minute (by issuing a retraction in order to secure his racing licence).

"We have seen a very complex situation. Given the circumstances, the result at which we all arrived...was actually two sides coming to an agreement."

Senna kept silent for a long time when asked if he still held a grudge against FISA. Finally he said, "Perhaps my silence speaks for itself."

DAN KNUTSON

The views expressed in this column are not necessarily those of the Editor or the magazine

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1990 FORMULA ONE GRAND PRIX CHAMPIONSHIP RACE No. TWO



Prost's riposte: sweet success before Senna's faithful

BRAZIL

MARCH 25 1990

David Tremayne

Revenge, so they say, is sweet. For Alain Prost and Steve Nichols in Brazil, it had a double coat of sugar.

At the beginning of the season the Frenchman had extended the hand of friendship to Ayrton Senna, keen to let 1989 bygones be bygones. Perhaps predictably, it had been rejected. With Ayrton, wounds go deep.

Okay, Prost could live with that, however transiently irritating it might be.

But then there was Ron Dennis, his former friend who still clearly harbours feelings of friendship. You don't work so closely for so long without them. Yet such is the hurt Ron still feels about Prost's defection that he just can't stop himself from commenting at times. It's a classic paradox. Here is the man whose winter words were simply 'No Comment', now unable to stop himself talking.

McLaren held a breakfast for the Italian press in Interlagos, and after the rumblings from Jean-Marie Balestre only days earlier, to the effect that the race might not go ahead, it

produced a further bombshell. Maybe Ron was tricked into saying more than he intended; certainly, he had been bird-mouthed on the subject with the Brits. Maybe he was just stung into silly statements. Whatever, he began by disclosing that he had offered Prost a \$1m sabbatical fee for 1990, with the plan then being to have him return refreshed to McLaren for 1991. That much was pretty much public knowledge, bar perhaps the actual figure itself.

Alain, Ron said, was perfectly capable of racing well for another four to five years, but Ron felt he needed a break. He then edged into different territory in his justification of the opinion, mentioning the state of Prost's currently troubled private life. It became a little sordid, but the Italians loved it. For them it would be the big casino, a week's worth of copy.

Now in full flow, Ron was a vocal runaway. His hurt at the defection to

Ferrari of Steve Nichols bubbled to the surface. He, and John Barnard, said Ron, had been unfairly poached by Ferrari, which waved the big wedge of lire to attract each. This was even more dangerous ground, as his suggestions on how Ferrari kept the rest of its workforce sweet when making such vast payments verged on the slanderous.

You will gather from the foregoing that McLaren and Ferrari relations remained, shall we say, strained, in Brazil. They are likely to stay that way for some considerable time to come. The wounds are still open, and there are those who cannot resist or stop themselves shaking a little salt into them every now and then.

When Ron made his comments he had every reason for confidence in the outcome of Sunday's 71 lap race. On his home ground, in front of the adoring Paulistas, Senna had been majestic all through qualifying. Berger had headed him briefly at one point, and he had even had a little spin after omitting to clean his tyres properly after a dirty moment, but it was nothing.

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ing. When the chips were down, Ayrton was head and shoulders above the rest of them, as he usually is. His pole, the 43rd of his career, was one of the very best, achieved in the dying moments of a Saturday session generally deemed up to that point to have been around three quarters of a second slower than Friday's. With his uncanny knack, he had sensed a slight change in the sweltering conditions and gone for it. Berger, by contrast though markedly more relaxed than he had been in Phoenix, had missed the opportunity.

"Nose wings went skyward, and the dream was over."

Meanwhile, the Ferraris floundered round, neither Prost nor Mansell able to tickle speed into them whenever they donned their qualifiers. Around the sinuous track they simply couldn't generate enough heat into Goodyear's E rubber. They wound up back on row three, separated by the two Williams Renaults, both of which looked the best they ever have round the twists, loops and the long drags of the Autodromo Jose Carlos Pace.

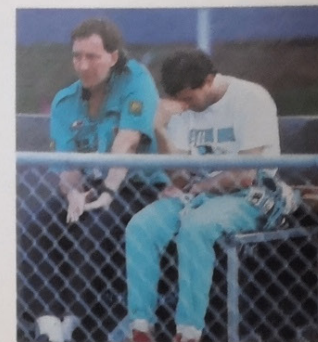
The pattern looked entirely predictable. Senna was going to walk it and win on his home ground for the first time ever. This time there would be no gear linkage problem after the warm-up lap, no first corner collision with Berger. And indeed there wasn't. There had been a tiny warning earlier on Sunday morning, when Prost had annexed fastest time in the warm-up session, but Ayrton it was from the green light, and Ayrton it continued to be in oh so easy style right up until the 40th lap. Berger pushed him hard for the first five laps, hard enough, perhaps, to root his front tyres. His McLaren began understeering and he backed off, awaiting a second chance when he made his tyre stop.

Prost, meanwhile, made short work of Patrese but it was Boutsen who held the interest. For a while he looked menacing, despite having to pump his brakes, and swiftly passed Berger in front of the pits before keeping the growth of the gap to Senna to a minimum. Perhaps, given the joker card of the high ambient temperature, we might have a race after all.

The Belgian, however, screwed his chances with an appalling pit stop, the sort every driver dreads. He locked a front wheel over a slight rise in the pit road, overshot his pit. Worse, he hit one of his own fresh wheels and mechanic Richard Ford, damaging the car's nosecone badly enough to require replacement. His day of potential glory was over.

Thus was Prost ideally placed to benefit from Senna's misfortune. Both made smooth tyre stops, and thereafter Prost was going flat out, keeping the gap to Senna to 12.5 secs, neither gaining nor losing but maintaining the pressure. Perhaps that is why, despite a 50 bhp advantage, Ayrton elected to lap Satoru Nakajima's Tyrrell in a corner, rather than on either of the straights that were lengthy enough to let the Honda V10s have their head. He followed the Japanese driver through three turns, saw him move over for him in the fourth, and then went for the gap. In fairness to Ayrton, it was exactly what Satoru intended him to do, but as the 018

Boutsen blasted past Berger but fell foul of his brakes



Heads down - disastrous DNQ for Leyton House



Piquet's point: amazing how incentives work



1990 FORMULA ONE GRAND
PRIX CHAMPIONSHIP
RACE NO. TWO

BRAZIL

moved off the racing line it got into a slide and moved back into his space. Nose wings went skyward, and the dream was over. Senna dived pitward for a replacement nose, and his countrymen groaned. Nor would there be a dramatic recovery. He chased Prost and Berger, the latter uncomfortable in the cockpit and in any case backing off with what sounded to him like a repeat of his Phoenix clutch problem, but it was a hopeless cause. Third, said the newly calculating Ayrton, was better than nothing, but losing that glorious dream hurt.

In fact, he was lucky even to salvage third. If Mansell hadn't ignored his crew's radio advice about a handling problem he wouldn't have lost so much time and would have taken

"Just as Williams and Ferrari are progressing in the chase after McLaren, so Lotus has slid backwards."

the place. His onboard front anti-rollbar adjuster had worked its way to an extreme setting, upsetting his F1 '90's equilibrium. Over the radio he told Maurizio Nardon about it and was advised there was nothing that could be done, given the manner in which the torsion bar adjusters sit within the monocoque, but at his tyre stop he removed the steering wheel anyway to let them have a look, before boiling angrily back into the fray when the original diagnosis was confirmed.

Patrese's challenge had suffered a temporary setback when he came across Senna, yet to get back up to speed after his tyre stop, and tried to overtake. He made it, but cut in too sharply and spun. Riccardo recovered and looked set for 4th until the charging Mansell hauled him in near the end, and then his Renault erupted unexpectedly after its oil cooler had become damaged by debris.



The number says it all...

With Boutsen recovering to fifth that left one point up for grabs, and it seemed as if a deserving Jean Alesi would scoop it for Tyrrell after a non-stop run on his Pirellis. However, the 018 was oversteering more and more and there was nothing even Jean could do to contain a flying Nelson Piquet. Where Benetton team-mate Sandro Nannini had screwed his chances in a brush with Alesi and de Cesaris at the start (shades of Phoenix!), Piquet ran well initially before his second set of Goodyears promoted massive understeer. He risked a second stop for a third set and, much happier with them, was able to grab the last point on the very last lap.

For the rest it was a barren race. Martini slipped to ninth behind Nakajima when his Minardi's brakes began to fade, while team-mate Barilla dropped a valve. The Lolas looked good in qualifying but succumbed to gearshift (Bernard) and suspension (Suzuki) maladies. The latter's retirement was a product of a warm-up session clash with Yannick Dalmas's AGS, and the Frenchman, too, de-

parted his first race in a long time with suspension failure. Likewise, after Olivier Grouillard had aviated the Osella over his back wheel, and himself retired with deranged steering, Michele Alboreto found his tardy Footwork Arrows in suspension trouble. The Ligiers survived with clutch (Larini) and brake (Alliot) problems after Philippe had qualified really well, while de Cesaris was out on the first lap with a little help from Alesi, and Morbidelli was delayed in his first Grand Prix by a gearbox which stuck in first for the entire opening lap. Caffi, however, made a go of things despite his recent collarbone injury, but eventually succumbed to fatigue. Foitek lost the drive in his Brabham after missing a gear in his last race for the team, while Modena uncharacteristically spun out of a good eighth place and couldn't restart.

And Lotus? Again, it was another disaster. Donnelly and Warwick had been first and third in Thursday's initial wet acclimatiser, and they were ninth and tenth in Sunday's warm-up, but in between there was nothing but

frustration and suspension and electrical trouble. Donnelly's race was spoiled when he worked looser and looser in the cockpit and then suffered numbness in his right leg. At an inopportune moment it became so bad he couldn't operate the right pedal at the right time, and off he spun. Warwick, after an early stop for Gurney tabs to reduce awful understeer, was making ground when his electrics quit yet again. Just as Williams and Ferrari are progressing in the chase after McLaren, so Lotus has slid backwards. Oh how it needs a good test session.

In many ways, the Brazilian Grand Prix was an irrelevance, for the real season starts in Imola, when all the new cars will be ready and everyone will have had five or six weeks of solid testing. To the thousand of Paulistas who attended, it was a major disappointment, but at least they had afforded the entrance tickets. Many thousand more simply continued their struggle against rampant inflation and poverty, limited by their new President Fernando Collor de Mello to the amount of money they are allowed to withdraw from their bank accounts. Things got so bad at one stage of the Grand Prix meeting that even the great American dollar - the God of Formula One - wasn't being accepted. You knew that meant the situation was serious!

For Ferrari, however, Brazil was a Godsend, especially after the fiasco of Phoenix. "You know," said Prost, "working at Ferrari can be difficult because there are people who don't understand the problems. It can be hard to explain to them".

But he had a twinkle in his eye, and so did the quiet Nichols, both of whom were grateful for such luck - and Alain's 40th Grand Prix win - so early in the year. Beneath the surface, though, the old tensions still bubble. "I'm sick to death of hearing about Ayrton's troubles," said Prost, after he and his former team-mate had studiously ignored one another on the rostrum. "I tried to make it up with him and Ron, but it didn't work. I'd like to remind Ayrton that I've won six times in Brazil, and the first time he wasn't even in Formula One."

To the Frenchman, every extra race he wins is one more Ayrton must win before he even begins to pull back the deficit in the 40-21 balance that currently exists, and that clearly pleases him. Suggestions that he must always rely on luck don't, however.

"If I thought I could only win races if Ayrton ran into trouble," he said heavily, "I'd retire tomorrow."



The decisive moment as Nakajima tries - but fails - to let Senna through

No smoke without fire...



1990 FORMULA ONE GRAND
PRIX CHAMPIONSHIP
RACE NO. TWO

BRAZIL

FROM THE COCKPIT

Jean Alesi arrived in Sao Paulo on the crest of a wave after his fine second place in the United States Grand Prix at Phoenix two weeks earlier. But, unfortunately for Jean, he did not enjoy the same good fortune in Brazil:

"Physically, the circuit is a tough one for all the drivers", he said after a first run on the new Autodromo Jose Carlos Pace on Thursday. "The corners are hard work. And there are a lot of them. The most important thing will be traction, grip and acceleration."

"It is a very difficult circuit technically, especially the first corner at the end of the straight, downhill to the left and then to the right. The circuit has a lot of fast corners and a lot of slow ones. It has uphill and downhill. And, I don't think it was really finished so it is quite dangerous in some places."



Timothy Collings

"... the circuit is a tough one for all the drivers..."

"We - the Tyrrell team - don't really have enough horsepower. We can't have a lot of speed on the straight and also have a lot of downforce. But I still hope to be in the top six."

After qualifying on Friday, Jean was no more optimistic despite recording the ninth fastest time on the provisional grid. He had a spin during the morning because of a problem with his brakes and had to switch

from his race car to the team's spare, designated for Satoru Nakajima, for the rest of the weekend.

"The lack of horsepower up the hill behind the 12 and 10-cylinder engines cost me a lot of time. I am pleased with all the work we did during the day - we have improved the car a lot."

"I know there is much more to come because we had a couple of problems. The first was that I didn't start my fastest lap aggressively enough and I lost time on the early part of the lap. Also, the engine in the T-car isn't quite as quick as the one in my race car which I did some damage to during the morning."

"I am sure I could have been the

first car behind the top three teams, but we made a mistake with the tyres. We tried two soft qualifiers on the left and two hard ones on the right. It was a disaster."

"Afterwards, I went just as quick with the used tyres but all the same compound. The engine in the qualifying car is down on horsepower too."

On Saturday morning, the team spent a great deal of their time working on tyres. Jean felt it was all worthwhile. "We learned a lot," he said. "So I knew it would be better than on Friday. Even though the track was a little slower."

In the afternoon's final qualifying session, he was one of only eight drivers to improve his time and he finished up seventh quickest.

"I was very pleased with my position because I had achieved the target which I had set myself. We were the quickest of the cars competing with V-8 engines and after the result in Phoenix I had a feeling I could do well in the race again."

"We also did a lot of work on the race set-up of both cars on Saturday morning and I felt we had reached a satisfactory balance."

In his efforts to improve his time, which he did successfully on Saturday, Jean had another spin. This left his tyres flat-spotted, but did not deter him.

Race day was hot and dry, but Jean seventh-quickest again in the warm-up when he was the only V-8 runner in the 1:21's, felt terrible. He had an upset stomach and the Tyrrell team imported a mattress to the pits to make him a makeshift bed.

Nothing would prevent Jean from driving in the race, however, and after starting seventh on the grid in the T-car, he ran seventh through the opening 27 laps.

When Nigel Mansell pitted, he inherited sixth, moving up to fifth when Thierry Boutsen called in. As the leaders went through a flurry of pit-stops, Jean took fourth for a lap, but he was never able to retain it and, after lap 66, when he regained sixth, to the finish it was simply a battle to stay in front of Nelson Piquet's Benetton-Ford.

"I tried everything I could to keep Nelson behind me."

"I tried everything I could to keep Nelson behind me. I managed it for the penultimate lap, but then I had a bit of oversteer and went wide on the last corner and that gave Nelson the room to use his more powerful engine to get past me to the finish line."



Eyes front - but Jean couldn't stop Piquet sneaking up behind

Strapped in and set to go: Tyrrell twins Alesi and Nakajima



1990 FORMULA ONE
GRAND PRIX
RACE No. TWO
**SÃO PAULO
BRAZIL**
25 MARCH 1990

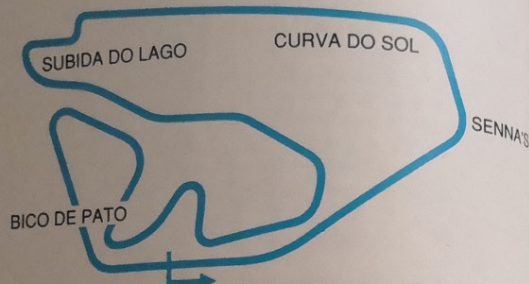
DRIVERS' WORLD
CHAMPIONSHIP

Pos.	Driver	Total
1	Ayrton Senna	13
2	Alain Prost	9
3	Jean Alesi	6
	Gerhard Berger	6
	Thierry Boutsen	6
6	Nelson Piquet	4
7	Nigel Mansell	3
8	Stefano Modena	2
9	Satoru Nakajima	1

CONSTRUCTORS'
WORLD
CHAMPIONSHIP

Pos.	Team	Total
1	McLaren	19
2	Ferrari	12
2	Tyrrell	7
3	Williams	6
4	Benetton	4
5	Brabham	2

Circuit length: 2.687 miles/4.325 km
Race distance: 71 laps (190.813 miles/307.075 km)



Senna - setting for third, staying on top of the Championship

OFFICIAL STARTING GRID

Ayrton Senna McLaren-Honda MP4/5	1:17.277	27	Gerhard Berger McLaren-Honda MP4/5	1:17.888	28
Thierry Boutsen Williams-Renault FW13B	1:18.150	5	Riccardo Patrese Williams-Renault FW13B	1:18.288	6
Nigel Mansell Ferrari 641	1:18.509	2	Alain Prost Ferrari 641	1:18.631	1
Jean Alesi Tyrrell-Ford 018	1:18.923	4	Pierluigi Martini Minardi-Ford M190	1:19.039	23
Andrea de Cesaris Dallara-Ford BMS190	1:19.125	22	Philippe Alliot Ligier-Ford JS33	1:19.309	26
Eric Bernard Larrousse-Lamborghini LC90	1:19.406	29	Stefano Modena Brabham-Judd BT58	1:19.425	8
Nelson Piquet Benetton-Ford B189	1:19.629	20	Martin Donnelly Lotus-Lamborghini 101	1:20.032	12
Alessandro Nannini Benetton-Ford B189	1:20.055	19	Gianni Morbidelli Dallara-Ford BMS190	1:20.164	21
Paolo Barilla Minardi-Ford M190	1:20.282	24	Aguri Suzuki Larrousse-Lamborghini LC90	1:20.557	30
Satoru Nakajima Tyrrell-Ford 018	1:20.568	3	Nicola Larini Ligier-Ford JS33	1:20.650	25
Olivier Grouillard Osella-Ford FA1M	1:20.650	14	Gregor Foitek Brabham-Judd BT58	1:20.902	7
Michele Alboreto Arrows-Ford A11	1:20.920	9	Derek Warwick Lotus-Lamborghini 101	1:20.998	11
Alex Caffi Arrows-Ford A11	1:21.065	10	Yannick Dalmas AGS-Ford JH24	1:21.087	18

RACE CLASSIFICATION

Pos.	Driver	No.	Nat.	Car	Laps	Time/Retirement
1	A. Prost	1	Fra	Ferrari (G)	71	1:37.21.258
2	G. Berger	28	Aut	McLaren-Honda (G)	71	1:37.34.822
3	A. Senna	27	Bra	McLaren-Honda (G)	71	1:37.58.980
4	N. Mansell	2	GB	Ferrari (G)	71	1:38.08.524
5	T. Boutsen	5	Bel	Williams-Renault (G)	70	
6	N. Piquet	6	Bra	Benetton-Ford (G)	70	
7	J. Alesi	4	Fra	Tyrrell-Ford (P)	70	
8	S. Nakajima	3	Jap	Tyrrell-Ford (P)	70	
9	P. Martini	23	Ita	Minardi-Ford (P)	69	
10	A. Nannini	19	Ita	Benetton-Ford (G)	68	
11	N. Larini	25	Ita	Ligier-Ford (G)	68	
12	P. Alliot	26	Fra	Ligier-Ford (G)	68	
13	R. Patrese	6	Ita	Williams-Renault (G)	65	
14	G. Morbidelli	21	Ita	Dallara-Ford (P)	64	
R	A. Caffi	10	Ita	Arrows-Ford (G)	49	Driver Fatigue
R	M. Donnelly	12	GB	Lotus-Lamborghini (G)	43	Spun
R	S. Modena	8	Ita	Brabham-Judd (P)	39	Spun
R	P. Barilla	24	Ita	Minardi-Ford (P)	38	Engine
R	Y. Dalmas	18	Fra	AGS-Ford (G)	28	Suspension
R	D. Warwick	11	GB	Lotus-Lamborghini (G)	25	Electrics
R	A. Suzuki	30	Jap	Larrousse-Lamborghini	24	Suspension
R	M. Alboreto	9	Ita	Arrows-Ford (G)	24	Handling
R	G. Foitek	7	Swi	Brabham-Judd (P)	14	Gear Selection
R	E. Bernard	29	Fra	Larrousse-Lamborghini	13	Gearbox
R	O. Grouillard	14	Fra	Osella-Ford (P)	8	Accident Damage
R	A. De Cesaris	22	Ita	Dallara-Ford (P)	0	Accident



But Prost's 40th was one of the sweetest

Fastest Lap: G. Berger (28) lap 55
1:19.899, 121.091 mph/194.871 km/h

(G) = Goodyear tyres (P) = Pirelli tyres

FASTEST LAPS

No.	Time	No.	Time
1	1:20.010	21	1:22.987
28	1:19.899	10	1:23.671
27	1:20.067	12	1:22.899
2	1:20.389	8	1:23.255
5	1:20.089	24	1:24.177
20	1:20.630	18	1:22.948
4	1:22.536	11	1:23.390
3	1:22.398	30	1:23.491
23	1:21.799	9	1:23.292
19	1:21.820	7	1:24.922
25	1:22.649	29	1:24.658
26	1:23.115	14	1:25.308
6	1:20.132		

- 40th GP win of Prost's career and the first for Ferrari; his sixth in Brazil.
- 43rd pole position for Senna, 27th in a McLaren.
- Berger's first points for McLaren.
- Foitek's 2nd and last race for Brabham.
- Dalmas' first race start since San Marino 1989 - when his engine would not start.
- Next round: San Marino, Imola May 13th

NON QUALIFIERS

No.	Name	Car	Time
35	S. Johansson	Onyx-Ford	1:21.241
36	J.J. Lehto	Onyx-Ford	1:21.323
16	I. Capelli	Leyton Hse - Judd	1:21.383
15	M. Gugelmin	Leyton Hse - Judd	1:21.616

- Gugelmin's first DNQ since 1989 Mexican GP; only the third time Capelli has missed a race since joining the team

Mansell: racing for finishes, but needing more points in Imola



PREQUALIFYING

No.	Name	Car	Time
29	E. Bernard	Larrousse-Lamb.	1:23.763
30	A. Suzuki	Larrousse-Lamb.	1:23.982
14	O. Grouillard	Osella-Ford	1:23.987
18	Y. Dalmas	AGS-Ford	1:24.015
17	G. Tarquini	AGS-Ford	1:24.265
33	R. Moreno	EuroBrun-Judd	1:25.763
31	B. Gachot	Coloni-Subaru	1:34.046
34	C. Langes	EuroBrun-Judd	1:39.188
39	G. Brabham	Life	

- No time for Brabham because a broken con-rod disabled the car as soon as he took to the track
- First time Dalmas has prequalified since returning to F1 at the 1989 British GP

STRAIGHT LINES

THE DEREK WARWICK COLUMN

I mola and Monaco coming up soon and Phoenix and Brazil behind me but you know what sticks in my mind the most - America. It is such an amazing place! I was staying with a friend of mine called Harley Cluxton and the Tuesday after the Phoenix race he took me for a ride down this river - the Salt River I think it was - in a helicopter piloted by his friend Bob Oliver. I've been in a helicopter dozens of times but this was definitely different. We were doing 150 miles an hour - 10 foot above the water, swerving left and right, climbing over the hills and diving into the valleys following the exact path of the river itself. It felt just like

something out of the movie 'Apocalypse Now' and later I found out why - because Bob and Harley both served in Vietnam. Even racing in a Grand Prix car hadn't prepared me for this experience. And then after that we put down on a piece of land that Harley owned and guess what he got out of the back of the helicopter? A grenade launcher, three different machine guns, a Colt 45 and a Smith and Wesson and one gun with a silencer. I couldn't believe it. It was a really strange feeling firing the gun... but that was nothing compared to standing there in this valley firing the sub-machine gun. What an experience. I felt just like Al Capone... and I

realised those gangster movies have got it all wrong - there is no way you can be accurate with those things. They just clatter away until they eventually hit the target, in my hands at any rate.

Even though we were on private land and being really careful we decided not to use the grenade launcher because it was just too dangerous. Perhaps it was the conservative British in me coming out. I don't agree with guns, and my feelings are quite strong because I'm a family man and have my children to think about, but I do appreciate that life is different in other parts of the world. In Phoenix the influences of the old Wild West are still fairly strong even though it is a sophisticated city these days. The constitution gives every American the right to bear arms and in Phoenix everyone is allowed to wear a gun if they want to. The law states that if you carry a gun it must be worn in plain sight, presumably so that the police and everybody else knows the score. Having said that I didn't see anybody wearing weapons although several people carried a gun or rifle in their cars. In some of the saloons there are even signs asking people to hand their guns in to the bartender - now that really is a throw-back to the old days. If you are thinking of going to America I would really recommend Phoenix. The people are friendly and there is a sense of space and a relaxed attitude to life. Racing-wise the country gives me good memories. I had my first race in Las Vegas in 1981, when I finally managed to qualify the Toleman.

This year the first two races weren't too special for me. We hoped that the car would be quick right out of the box but really that was our optimism



Phoenix - something of a dampener!

talking and not our rational minds. One of the cars hadn't even had a shakedown until it got to Arizona! Our thinking was that we wanted to spend as much time as possible designing and building the car and with the season starting that much earlier it made everything very tight on production deadlines, especially as we had a new engine and a new transverse gearbox.

In Phoenix I had an oil tank problem on the Friday and it rained Saturday. Martin and I were quick that day - he was fastest of everyone in the morning session, I think - but it meant the dry qualifying times from the day before decided the grid and that left me 24th. I needed binoculars just to see the front row! Then I had suspension problems in the race and a near miss with a concrete wall at a hundred and something miles an hour. That kind of experience leaves you with a particularly candid point of view about a few things when you get back to the pits.

When things get frustrating like that you appreciate your family being around to help you relax - Rhonda was in Phoenix with me - and the best thing you can do is talk it through completely in the team de-brief and then walk away from it all, relax, think, sort out the problem and come up with solutions. It is often difficult to solve everything at a Grand Prix. I know I have three days but after unofficial qualifying, de-briefs, lunch, journalists' interviews, qualifying, more de-briefs, discussions, and sponsors' suppers there is very little time to do anything else. Don't get me wrong, I love it all - but perhaps in one

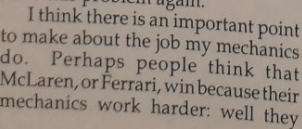
ancillary buildings weren't finished but the circuit has certainly set new standards for many of the other tracks in the world to follow. The big shame is the standard of life of those living in the favelas (shanty towns) we passed on the way to the track. I was told entry cost something like a month and a half's salary for the average Brazilian and yet the circuit was packed full on raceday - that shows you what motor racing means to them. It was good for motor racing that Ferrari won - but a shame for all those people who came here just to see Senna win.

Actually we arrived in Brazil just after a new President Fernando Collor, was appointed and he had frozen all the currency reserves. Brazil has rampant inflation running at 75 per cent a month (in our terms a £20,000 Porsche would cost around £35,000 if you paid for it a month later). The teams turned up with pockets full of dollars and no way of converting them into local currency. On the first day the Lotus mechanics didn't even have sandwiches at the track because we couldn't get the money to buy them with. We couldn't buy petrol for the hire cars and had to eat in the hotel each night.

The worst thing was that our fuel supplies were stuck at the airport. It took a police escort to get them out of customs. I thought that was a good sign because it meant the officials were backing the event as well. Goodyear, who supply our tyres, had their entire Grand Prix tyre stock of over 2700 tyres stuck in customs at Santos for 11 days and it took government intervention to free them too. As it turned

And even if the weather picked up in Brazil, the Lotus fortunes didn't - for Martin or myself





That's why April was so busy. We tested at Silverstone, Imola, back to Silverstone, then back to Imola again

Then after that comes Monaco and it is my favourite race of the year. It's hard on the driver but the atmosphere is remarkable. Even the posers making fools of themselves is all part of the scene, the buzz, the charisma, that is an integral part of Monte Carlo. Nelson Piquet describes it as 'like riding a bike in your living room' because the circuit is so tight and narrow for 200 mile-an-hour Grand Prix cars but the power is still very crucial.



TECHNOLOGY AND DESIGN

[illegible]

The verdict will be delivered in the coming weeks and months, but - as Gerhard Berger says elsewhere in this issue - the 1990 World Championship has probably just been decided. Out of sight, perhaps even out of mind, the protagonists have been reviewing, revising and refining for the challenge now confronting them.

The seven-week gap between Interlagos and Imola was always going to be an important test period as teams regrouped for the 'real' season. The freak show left behind, this would be the time to start performing. But suddenly these rehearsals assumed a new significance. The intensity of activity had been heightened by topsyturvy events in the Americas.

Despite Jean Alesi's splendid intervention in the Pirelli-shod Tyrrell Ford, Ayrton Senna and McLaren Honda had called proceedings to order in Phoenix. It seemed Ferrari had been put in their place, much as Ron Dennis had warned with his jibes about the 'Winter Championship'.

In Brazil the McLaren chief was positively outspoken. He decried Ferrari's 'head-hunting' and suggested Alain Prost should have taken the one million dollar sabbatical he offered him. So what happened on race day? Senna again proved himself fallible (if this time a little unlucky, too), the Ferrari was reliable, Prost was wreathed in smiles and Dennis had to wipe the egg from his face

Gloves Off... ...the Fight Starts Now!

by
DERICK ALLSOP

before snarling his defiance. We lost but we weren't beaten, he said.

The contest was on. A year we feared might drag out in single-file procession held out promise after all. Everyone applauds the achievements of Dennis and McLaren International. They have set standards few in any sport or sphere of life can even aspire to. But Formula One desperately needs

the spectacle, tension and uncertainty of true competition. For that matter, so do McLaren. They must know it is not enough to be winning. They have to be seen to be BEATING people.

Now, it appears, opponents are gaining strength. The Williams Renault is a car to be taken seriously, the new Benetton Ford might be. Of little doubt is the threat to McLaren from Ferrari. Visibly lifted by that victory at Interlagos, the Italian team headed for home to get into their development programme with fresh vigour and belief. At Maranello, Fiorano and elsewhere, they had a new chassis and a new engine to work on.

McLaren had booked test sessions at Imola, Monza and Paul Ricard. Any danger of complacency had passed. They had been bitten in Sao Paulo and you know what a wounded animal can be like...

The San Marino Grand Prix will give an indication of the progress made by the teams during testing, though Ferrari point out they may still be some way short of their full potential. Cesare Fiorio, the man who has the dubious privilege of directing the Ferrari challenge, says: "At Imola we still have the problem of the slow corners and chicanes. The McLaren Honda has the acceleration, we know that. But we have speed. We are getting closer all the time."

Brazil was a vital result for the entire Ferrari camp but, as he conceded, for Fiorio in particular. "Yes,

there was a lot of pressure after Phoenix. People were saying that all our winter testing meant nothing. But I knew it did, and Interlagos proved that." Fiorio unashamedly savoured that triumph. "All wins are good, but this one especially so", he added. "We have seven weeks to enjoy it! Usually you have only one or two weeks before the next race, which you can lose and the pleasure is gone. We won't enjoy it too much, though - we have work to do."

There is an urgency in the Ferrari camp these days, generated in no small part by the two drivers. No-one can now have any illusions about Prost's commitment this season. Nigel Mansell certainly hasn't. Mansell was less than impressed with attempts to fix his anti-roll bar at Interlagos but he cajoled the car to fourth place ("a fantastic drive", Fiorio was at pains to stress) and should draw encouragement from that.

Senna's partner Gerhard Berger has also had an uncomfortable ride so far. He followed up his embarrassing slide into the tyres at Phoenix with a steady second place in Brazil, no mean feat considering he has to crumple his long limbs in the tiny McLaren cockpit. He is hoping the team can create an extra centimetre or two so that he may at least shift through the gears more easily and effectively.

"Mostly that aggression pays off, occasionally it does not."

But what of Senna? He was, he said, uncertain of his motivation before the start of the season. The months of open, political conflict had inevitably gnawed at his enthusiasm for Formula One. Back in the bosom of his family, he was content to distance himself from Paris, Europe and the Grand Prix stage as a whole. Phoenix revived the competitive instincts. He declined Prost's invitation to "shake hands and forget '89", but once out on the track was at peace with the world and in total control. He drove quite beautifully.

He was in command, too, for most of the Brazilian Grand Prix weekend. His judgment as well as his skill in producing his fastest time - pole was his anyway - in the last moments of qualifying bore the hallmark of genius. For most of the Saturday session the track was slower than on the Fri-



Hands up who wants to forget Phoenix?

Telling moment: Boutsen, Williams and Renault blast past Berger, McLaren, Honda



(Dominique Lenoy)

Phoenix: Alesi leads, but Senna's McLaren is waiting to pounce





Benetton and Ford: front-runners soon?

Collective wisdom at Ferrari: Prost (left) and Fiorio



day. A warmer afternoon and oil critical sections of the tarmac conspired to frustrate the drivers. Senna had a fruitless first run but used his original set of tyres to take another look at the circuit 10 minutes from the end. He decided it would be worth having a go in the last three minutes. He was, of course, absolutely right. "Ah, but didn't he throw it all away in the race?", I hear you say. Possibly. It depends on how you like your drivers. Even given that the door was opened and then closed, it is reasonable to suggest that Prost might not have risked taking Satoru Nakajima on that corner. And yet Prost is the first to admit he lacks Senna's aggression in traffic. Mostly that aggression pays off, occasionally it does not. Would you have Senna drive any other way? I, for one, would not. His positive intent is surely a strength, not a weakness. Take away the combative spirit, the obsession with being first every time he rolls on to the track, be it untimed practice, qualifying, warm-up or race, and you take away the very appeal of the man.

He is even good value at a Press conference. After securing the 43rd pole position of his Formula One career, in his home town, he was invited



Berger: a canny second in Brazil, but hungry for victory again

to name the person he would prefer to receive the racewinner's trophy from. (The mischievous question was posed a few hours after FISA President Jean-Marie Balestre's theatrical appearance at the circuit). Senna thought carefully for a while - as he usually does - and then named three people: "One is my father, one is my girlfriend, Xuxa, and one is our President - the President of Brazil!"

And what of the President? The FISA President, that is... He presented himself to trouble-torn Brazil as a cross between De Gaulle and the US Cavalry. His was a mission of mercy, an astonishingly unselfish gesture by a sick, abused, misunderstood old man. His entourage included three minders, one carrying a strange little case. It was said the case contained a sub-machine gun. Given the opportunity

to address the world's media (well, not so much given as taken) he required no support. He shot from the lip as only Monsieur le President can. Bizarre, outrageous, it was vintage Balestre. As one Italian sage said, "He is fantastic. Dennis, Fiorio, they are so serious, so boring. Balestre is entertaining. He makes it all worthwhile."

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"The accident is over, forgotten, long time past." For Gerhard Berger, maybe, but not for the rest of us who were there: the 1989 San Marino Grand Prix had barely begun as the leaders approached the sweeping left-hander called the Tamburello for the fourth time. Senna, Prost, Mansell, Patrese... and Berger's Ferrari. But the red car would not follow the rest.

"As I went into the corner the car was normal, then suddenly I got a vibration and thought, 'Jesus, the front tyre has exploded'. But I looked, and it hadn't. I tried the steering, tried to induce a spin to reduce the impact - and the car went straight on. So I looked at the wall in front of me, realised there was no way to change the angle, so I took my hands off the wheel, put them across my chest and thought, 'This is going to be a big one'. Same feeling as at Hockenheim '87: that's an accident you can never survive, that's how you die."

Head-on into the crash barrier, spinning to the left, bouncing down the wall - and as it came to rest, a spark ignited spilt fuel and the Ferrari was a ball of flame. "I don't think there has ever been an accident like mine", Gerhard reflects. "When I went back there testing, I looked at the rev limiter at that very spot: 12,500 in 7th, which on the Ferrari means 285 km/h." Niki Lauda, his great Austrian predecessor, had told him: "There is nothing as bad for a racing driver as going off in the Tamburello. The last place where you want an accident..."

"The first bang I remember - the tyre coming up and hitting the side of the cockpit. After that, nothing - not the flames, not a thing - and I'm happy

Light and shadow: this lovely testing shot reflects the last year in Gerhard's life

Berger 1: "Now the Car is My Friend Again"

by
BYRON YOUNG

about this. When I woke up the first thing I remember was a doctor trying to put an air pipe in my mouth. Then I felt an injection in my arm which hurt. When I woke up again my first thought was that I was on holiday. Everything was bright, I thought it was all very strange, people all around me, looking down, wearing helmets, and one guy said, 'You've had a big accident.' Then I slowly started to remember: Patrese ahead of me... I was at Imola... and then I started thinking about how long it would be before I would drive again."

The consequences were two-fold: the physical shock - and the mental barrier of getting back in a car. "It's unbelievable what an accident like

that does to you. It takes all the energy out of your body. You don't feel away from it you must be all right. But two, three months later I was not the same, there was something missing, something empty. It took me a long time to recover."

Then came Fiorano, and private testing. "When I was back in the cockpit - May 28th, five weeks after the accident - and put on the flameproof clothing and balaclava, all of a sudden my body started to shiver. It was ice cold, the coldness running all down my back. Because my body had realised, last time I had this on there was some terrible accident." Berger broke the Fiorano lap record that same day.

"It took a long while to get back to normal", he adds, "but now the car is my friend again. Now Imola is no different from any other place. I've seen the television pictures of the accident. I don't mind seeing it, but I don't like to remember I was in it." A sombre statement - which Gerhard ends by laughing out loud. "Sometimes I think, 'Hell, what if you have an accident and are disabled? Everything destroyed - is it worth the risk?' But racing is what I enjoy most in life, so why should I stop? Perhaps, though, it's easy to speak as a leading driver. Maybe if I had to go back to a middle-of-the-field team I wouldn't take that risk, because then the risk is the same but you're not racing to win, just to compete..."

The last word is typical Berger, matter-of-fact. "I don't think the accident has changed me at all. In qualifying I don't think about the limit, I just go until I feel it is too late - and then I try to bring the car back."

In '89 he walked the line - too often after retirement



Gerhard Berger approaches Imola with genuine eagerness. "I had always said to myself, I'd be happy if I could collect some points from Phoenix and Interlagos, didn't have to start the European season from zero - but the season really begins for me at Imola. Because I still have to become familiar with the McLaren-Honda team, study and learn the car better." Where coping with Senna is concerned, there are no secrets. Their relationship is based on unlimited respect, friendship and - something not everyone knows - good-humoured common sense. Between Arizona and Brazil they spent time together at the beach villa of one of Ayrton's friends - flying helicopters, jet ski-ing, water ski-ing and talking only very occasionally about motor racing.

When Senna celebrated his 30th birthday, Gerhard told him: "Welcome to the club! I already gave you my present, at Phoenix when I crashed into the tyre wall and let you through to second, which became first..." Their cooperation, says Berger, is absolutely perfect - even if one of them is always reading the Bible, the other one prefers Playboy magazine!

Both men know hiding secrets is the first step: lying to each other could be the second. When Berger took

Berger 2: "The Ultimate Challenge in my Career"

by
HEINZ PRUELLER

provisional pole in Phoenix, Senna adopted his new team mate's settings for a Saturday session eventually ruined by rain - it's the way they've decided to work.

How different, though, is the McLaren-Honda way of doing things? "McLaren is quiet, cool, controlled on race weekends. McLaren to me looks

better organised: everybody knows exactly what he has to do. No panic, no chaos. When you do well, Ron Dennis says just one little word, as up and down on the pit wall - but somehow it counts more."

And what the Japanese engineers want from him, Berger goes on, is "beyond any other kind of challenge I ever had. I was fascinated when Osamu Goto showed me the computer printouts from the laps Senna is doing and I am doing: identical line, same revs, same braking points, same acceleration. Maybe once one of us brakes half a yard earlier or later, but basically the same curve. Mansell, they told me, had the same characteristics as Senna and myself. Not Prost: his line is softer, fewer ups-and-downs. I have to compromise this year between the Senna and Prost driving styles."

Thus it was that when he got stuck behind Senna's gearbox at Interlagos Gerhard said to himself, "For Christ's sake be careful! No risks! If you get it wrong they're quick to say, 'His mistake - he might be quick, but he never finishes'. But after my error in Phoenix, when I got my right foot stuck between the pedals, I swore to myself I would finish at any cost." And a very strong second he came, despite all the inconveniences of a new, still unfam-

iliar cockpit. "I still can't sit properly in the car. If I were just one centimetre bigger I probably couldn't fit into the McLaren at all. I have problems changing gear properly, I had terrible cramp in my right foot after my pit stop - which is why Imola testing this April was so important for me. Don't forget how little racing I had in '89, how rarely I finished a race. Monza, okay, but there most of the time you're just going straight. At Estoril I had to press hard, Jerez was exhausting, but that was the lot. I still need to cover full race distances, fit into the car and feel really comfortable."

***"To be World
Champion, I would
have to beat him
anyway - and maybe
that's more feasible
in the same car..."***

Berger has another dramatic point to make about testing: "I am convinced the 1990 World Championship will be decided in the April testing, especially at Imola. The one who studies his car best, learns it best, can squeeze more out of it, really understand what his car wants, what it does and still can do - that driver will be the 1990 World Champion!"

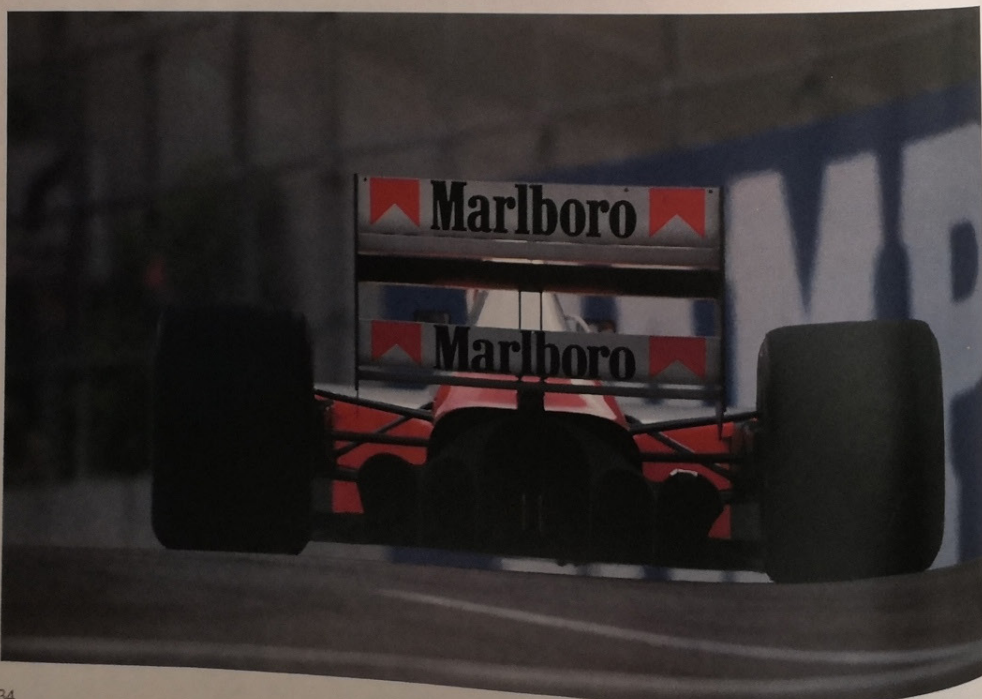
Both Berger and Prost, who exchanged places at the end of '89, are still convinced the other man made a stupid mistake in leaving his team. Berger has no regrets at all. "Senna is the greatest, the ultimate challenge in my career. To be World Champion, I would have to beat him anyway - and maybe that's more feasible in the same car..."



(Allegro/Pascal Boncheau)

Finish at all costs: Berger made no mistake in Brazil

Phoenix failure: Gerhard's own mistake cost him dear



(Allegro/Pascal Boncheau)

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Thierry Boutsen Talking

PHOENIX - FUNNY PLACE TO START THE SEASON...

Adelaide is history: I was unbeaten in Formula One for four months, but that time flew by, and in Phoenix, rather than start a new decade, you felt you were in another last GP of '89. We were used to meeting up again in Rio, where we would have gone testing several times before lining up on the first grid of the year. Rio was relaxed, familiar territory, an easy way back into the year. At Phoenix there was none of that: there hardly could be on a street circuit, with no grip, lots of bumps and forbidding concrete walls. That kind of track offers no true reflection of the state of play, in fact it's often a surprise result that really doesn't tell you a whole lot. Too much work, too much tension, too much at stake...

I wasn't too thrilled at being ninth on the grid, either, because of a down-on-power engine in Friday qualifying - and next day's rain pleased no-one

but Berger, who clung on to pole position. After brake problems in warm-up I wasn't really sure what to expect from the race itself, and I was happy to avoid all the traps and end up on the rostrum with Senna and Alesi. Traffic in the chasing bunch... a misfire... just getting to the end and scoring four points was cause for celebration, especially as they took my personal tally to exactly 100.

We worked long and hard - and quietly - over the winter, at Ricard and Kyalami, where we were alone in spending a whole week testing intensively in extreme heat. It only needs a little more for Williams to be on terms with McLaren, and I'm sure that in race conditions we are on a par with the Ferraris - with one little difference: we are markedly stronger on the reliability front.

Virtually everything on the FW13 has been rethought: new suspension front and rear, a new engine better

adapted to the chassis, the RS2 engine already out-performing its predecessor, with I'd say 20 more horsepower. We've kept the RS1's flexibility, progressive power and reliability, now we just have to move ahead in sheer performance terms, it's the only way to reduce the gap to Honda.

Ayrton scored nine points in Phoenix, but with an eye to the title race the retirements of Berger and the two Ferraris were no bad thing. I don't think Alesi/Tyrrell/Pirelli will be able to repeat their Phoenix performance everywhere else, so my result was a good start.

No change of team this year, so we all know one another, we've even had time to get to know one another's strengths and appreciate them more. For Williams, 1989 was a tricky year, coming out of a disastrous season (active suspension and the 1988 Judd engine) and keen to put that right as quickly as possible. So when the late-

King for four months - but Adelaide is history now



(Angier/Ford/Rodwell)

ness of the FW13 programme cost us dear - especially as the Renault engine was growing more and more reliable and competitive - our impatience made for certain tensions within the camp. There was a tendency to compare my times with Riccardo's without always weighing up the pros and cons. But my win in Australia put things right and gave me a lot of confidence. Riccardo and I spent a lot of time together this winter testing, but also ski-ing and more recently still on holiday, between Phoenix and Sao Paulo, with Nannini on the "Club Med 1", a huge yacht that took us on a Caribbean cruise. Riccardo and I are now close accomplices, and we've formed our own two-man commando squad to attack the rest of them!

BRAZIL - ENCOURAGING STUFF!

The Brazilian Grand Prix produced a very different result from Phoenix - but even if I only picked up half as many points in Sao Paulo, I'm not complaining...

As far as I'm concerned, the Interlagos circuit was the ideal place to gain a true picture of the relative strengths of the teams in the running for the world title. As we were on a new track, everybody began practice on exactly the same footing. With an average lap speed of about 125 mph, the track is in fact slightly slower than it seems at first sight. There are several long, sweeping curves, and straight-line sections mixed up with tighter turns. In a word, Interlagos grouped all the problems a driver could hope to face, and performances on that track are a fair guide to everyone's chances in the weeks and even months to come.

One lesson was that the McLaren-Hondas and Ferraris are very evenly matched, even if the Italian cars tripped up strangely in qualifying. At any rate the problems they had in Phoenix seem to have been solved. As for the Williams Renaults, they no longer fall far short of those two major rivals - at least, that's my own opinion. I base that belief on performances in Brazil. In qualifying we were a good half-second adrift of the McLarens - especially Senna's! That gap can be explained in part by the difference in engines - a point I will come back to - and also by chassis behaviour. But the gap between us and the McLarens



has been cut down, I'm sure of that - and that in itself is already a major encouragement. On top of that, in race conditions, we proved we could mix it with the McLarens and Ferraris fairly and squarely. We shall all be working flat out before the next Grand Prix, which won't happen until mid-May at Imola. That unusually long gap at the start of the season will give us the chance to hone our weapons for the forthcoming battles.

You probably had as good a view of it as I did, thanks to the tv camera installed just to the right of my cockpit: my passing manoeuvre to overtake Gerhard Berger's McLaren had real symbolic value for me - passing a McLaren-Honda on the straight isn't an everyday occurrence. From the start of the race I knew I was going better than Gerhard because I was right on his heels. Not too close for the first few laps, so as not to ruin my

tyres and to avoid the usual problems of turbulence, but near enough to pounce on the slightest opening.

We had really good top speed on tap because we were running with less downforce than the McLarens. Add the benefits of the tow, which are considerable on a long straight like this, and the extra horses provided by the Renault RS2 engine, and you're there! In the following laps I got away with no great difficulty and even if I couldn't quite match Senna's pace I had no trouble keeping Prost at bay.

And yet from the outset I realised my brake pedal was unusually soft, and I didn't have the confidence to squeeze out the maximum under braking. The brakes were overheating, and I had to pump the pedal to keep them working efficiently. Despite that handicap I was able to sustain a good pace, which shows how much progress we have made this



Well, we can't be working all the time, can we?

winter. With new tyres, after my disastrous stop, I was fastest on the circuit for 10 laps or so before the brake pedal started going softer and softer. I kept the fastest lap for several tours, at a time when my opponents were giving their best after stopping for new tyres themselves. In short, with all other things being equal, I was in the thick of it - QED!

Obviously I have to dwell on the tyre stop that crippled my chances of winning the Brazilian Grand Prix. The problem goes back to the difficulties with the brakes on my Williams: I came in at the arranged time, and entered the deceleration lane at the usual speed. The mistake I made was to underestimate how bad the brake trouble was: being so concerned to get the line right and stop my car at just the right spot, I forgot to pump the pedal as I had been doing for a number of laps in the major braking areas. The consequences were calamitous: the pedal went to the floor, the car came in too fast and I couldn't stop at the right place. What's worse, I hit one of my own mechanics and the nose of my car was damaged by one of the fresh tyres waiting for me!

Thankfully the mechanic came out of it with just a scratched forearm. The time it took to change the nose and fetch another tyre seemed interminable - so much so, I was banging my fist on the steering wheel in my rage... I went out again a very angry man - angry with myself, of course having lost 1m 20s in all - the equivalent of a quick lap. I got going again with the bit really between my teeth, bent on going for it. The brakes had had time (!) to cool a little and the car was

handling very well, which gave me the chance to up the tempo for 10 laps or so. Then the problem of tricky braking reared its ugly head again. So having got the better of Alesi, I backed off a little knowing that Mansell - ahead of me in the race order - was too far away for me really to attack. The end of the race was very trying; taking off over a nasty bump, I hurt my neck on landing. I felt a pretty worrying crack somewhere in my back, but a few minutes in the expert hands of Pierre Baleyrier at the end of the race soon put that right.

If I did eventually score two points for fifth at Interlagos, it was, sadly, because my team mate Riccardo Patrese retired a few laps from the end.

That took my total to six points and kept me in touch with Alain and Ayrton, but I'm still mad when I think of that incident in the pits that lost me precious places.

The reason for Patrese's retirement was an oil radiator leak that proved terminal for the engine, so the reliability of the Renault engines themselves is not in question. The RS2's performance is coming on all the time, and I was able to realise in Brazil that the RS2 is in fact a lot more powerful at the top end than its predecessor, though it doesn't yet have the RS1's torque. Bernard Dudot's team will thus be putting all their efforts into improving the engine's flexibility, which will be especially helpful out of those Imola chicanes and in the twists and turns of Monaco. We shall also be looking carefully at our chassis preparation ahead of these two races. The FW13B has come on a great deal, but we still need to improve the way the rear wheels work so as to put the power down better.

Patrese and I will be redoubling our own efforts in private testing, too. We are on the same wavelength, Riccardo and I, and there is no chance of any misunderstandings between us. Of course, team mates are always rivals in Formula One, and I won't deny I'm glad to have been consistently quicker than he has since the start of this season. Last year people often blamed me for not taking the upper hand, but I was running a little low as a result of my severe off-track excursion at Rio a year ago. All that's behind me now, and I've got back all my drive - as I hope to show in the races coming up!

Phoenix: food for thought with my engineer David Brown (left) and Alan Challis



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**VAUXHALL. ONCE DRIVEN,
FOREVER SMITTEN.**

1989 was a year distinguished by an unprecedented level of news on the Formula One scene, and even when the season itself had finished so soggy in Adelaide one story was to rumble on and on: The Brabham Saga.

Its beginnings could be traced back to November 1988, and one of the sport's longest-running dramas - Formula One's answer to *The Mousetrap* - was only finally concluded days before the 1990 opener in Phoenix.

The Brabham team that ran Andrea de Cesaris and Marc Surer in 1987 was a shadow of its former self, devoid of the talents of Gordon Murray whose BT55 had proved a dramatic flop, beset by lack of sponsorship. Towards the end of the season Bernie Ecclestone finally tired of it, and sold it to Alfa Romeo, and as it quit Formula One the Italian company began work on the V10-powered 164-derived Procar that made such a glorious noise when demonstrated by Riccardo Patrese at the Italian Grand Prix meeting in 1988. Procar, despite Max Mosley's unstinting efforts, didn't take flight, but John Baldwin's design and its detail execution was superb.

Alfa, too, was open to offers towards the end of '88, and former journalist Peter Windsor, then Williams

The Brabham Saga

by
DAVID TREMAYNE

public relations manager, began talking seriously with Walter Brun. The Swiss apparently had the money, and the plan was to buy the team, set Windsor up as manager, and run in the Championship again in 1989.

Right from the beginning there were false starts, a scheduled press announcement being cancelled at the last minute in Adelaide the day before the Australian Grand Prix. Nevertheless, Windsor was proudly sporting a tee-shirt with the message 'Brabham is back' and bit by bit the story filtered out. Top Golfer Greg Norman had been connected by speculation with the project for some time, and Windsor met such suggestions with the comment: "He has been instrumental in the whole thing, talked to him about a year ago and he felt ready for it. It won't affect his goal in any way, and indeed there will be some overlap. He's been my motivational force."

At that stage it seemed that Brun, already the owner of Euro Brun (a team which had singularly failed to distinguish itself during its debut season) was prepared to run two separate teams, but Windsor deflected fanciful suggestions that Brabham might later prove a home for Nigel Mansell when he had had enough of Ferrari. The Australian writer had, of course, been instrumental in bringing Mansell to the attention of Colin Chapman in 1979.

In the wake of the Australian Grand Prix, the project gathered momentum. Sergio Rinland, a dyed-in-the-wool Brabham man, was re-

called from his year's sabbatical with Scuderia Italia to pen the new BT58. The Argentinian designer has such a love affair with the marque that it is said his blood would coagulate into the word Brabham if his veins were to be cut.

Windsor had long rated Martin Brundle and Stefano Modena, and through his ministrations both were signed for two years. Everything was gathering momentum nicely when the first bomb went off. In December it was announced that Windsor was no longer connected with the team, would no longer fill the role of Managing Director. He put a brave face on things.

"I put the deal together initially, but I didn't want to become involved in the day to day running," he explained disingenuously. "I negotiated the deals with the drivers and the key personnel and I'm very pleased about that, especially getting Martin and Stefano sorted out."

"The matter dragged on until another bomb exploded in an airport lounge at Heathrow..."

"The deal has been done with the new owners - Walter Brun is involved, not necessarily financially - and Bernie is keen to see it work. He loves racing and he loves Brabham, and he obviously wants to see it do well."

Windsor spoke cautiously of another major project, but the truth was different. Brun had sold Motor Racing Developments (Brabham) on to another party, fellow Swiss businessman Joachim Luehti who ran a company called Kingside Establishment. It was he who had vetoed Windsor's inclusion, and from that moment Windsor was on the defensive. Behind the scenes he had immediately consulted his lawyers, and the lengthy legal battle was about to commence.

Windsor cited breach of contract, and applied successfully for a series of injunctions that limited Brabham's power to operate independently. The case was obviously costing him money, as he faced a lengthy period out of employment researching background material. When taxed on the matter he admitted to the presence of an anonymous benefactor; insiders immediately thought of Norman (now

no longer connected with Brabham) and/or Mansell, although neither was ever to be confirmed in that role.

Brabham, meantime, went motor racing, and by Monaco both Brundle and Modena were in the points. Windsor was also there, glibly fending off questions about his activities. He had been offered £40,000 to walk away, but had declined. The figure was raised quite substantially, enough to kindle his interest, but then Luehti decided against payment. The two were spied in heated debate in the pit lane on the Saturday, doubtless discussing their pending legal case. Things had escalated to the point where a British judge had required Luehti to appear before him to answer questions about his takeover of the Chessington team. Luehti, however, was in no hurry to attend and took care not to visit the U.K.

That little snippet had been leaked to the specialist press by an anonymous letter in mid-April. Luehti's lawyers, Frere Cholmeley, had been cautious on the subject when questioned, their Dr. Karl allowing: "The hearing last week was to decide whether or not the plaintiff is entitled to have Mr. Luehti cross-examined in front of a High Court judge. The court decided in the plaintiff's favour."

Luehti himself, in a remark he at the time requested remain off the record said: "I think Mr. Windsor is not behaving like a gentleman."

The matter dragged on until another bomb exploded in an airport lounge at Heathrow as racing people prepared to fly out to Spa for the



Gordon Murray: talent no longer on tap

Belgian Grand Prix in late August. "Race boss arrested on fraud charges" read one daily headline, and more than one team director's heart fluttered uncertainly. Luehti had been arrested in Aargau, Switzerland, to 'help police with their enquiries'. Under Swiss law he did not have to be charged and indeed, as this is written, he still languishes in a prison cell. One rumour suggests a suicide attempt failed last year.

He was suspected of embezzling clients' funds via Adiuva Finance AG, the foreign exchange company he

Faithful Brabham servant Patrese strikes sparks in Austria, 1987



Sir Jack: wonder what he thinks of it all?





formed. The Federal Banking Commission ordered his arrest 'as the chiefly responsible person in the case against Adiuva' and also ordered the liquidation of the company as its assets were frozen.

In a statement it released at the time, the FBC and the Office of the Investigating Magistrate of the State of Aargau said: "Due to the urgent suspicion that \$100M has been embezzled, we have notified the prosecuting authorities of the Canton of Aargau where another criminal investigation against Luehti is also under way." At the same time, the FBC had also frozen the assets of Kingside Establishment, which owned MRD. With Windsor's interlocutory injunctions still firmly in place (they prevented Brabham disposing of more than 20% of its shares and major assets, and from undertaking any transaction over £10,000 without his consent), the situation for Brabham began to deteriorate. It made the end of the season by the skin of its teeth, but then came rumours that it was all up for sale.

Meanwhile, Windsor had joined Ferrari's UK offshoot GTO as 'Project Coordinator', while Onyx founder Mike Earle and his partner Joe Chamberlain had left their team, following a series of arguments and difficulties with the wealthy and unpredictable Jean-Pierre van Rossem, the Belgian entrepreneur who had bought them out via his Moneytron financial advisory service.

They were keen on buying Brabham, in company with Italian partner Romeo Casola, and hoped to entice the Japanese Middlebridge Engineering company into helping with the funding. Italian industrialist Carlo Patrucci was also in the market, after losing out on a plan to buy into Gerard Larrousse's Lola team. Through the winter months something new seemed to emerge every week, and at one time the strongest rumour was that Ron Dennis might massage a deal between Brabham and Porsche, while taking a major shareholding himself.

It was an upsetting time for those closely concerned. Martin Brundle in particular was feeling the draught. Some 40% of his 1989 salary had yet to be paid and, though both he and Modena had penned their contracts, rumour persisted that if Middlebridge took control Emanuele Pirro would take his place. Earle and Chamberlain spent a lot of time in Japan talking with Middlebridge owner Koji Nagauchi, and then came another development as Luehti's attorney Beat



Skies have been slightly cloudier in recent months...

Widmer appointed them as directors of MRD via their company McKeever Group Plc.

Like so much of the saga, this bit ended in tears some weeks later when Widmer fired them on the grounds that they had brought none of the sponsorship they had hoped, nor had succeeded in having Windsor's injunctions lifted. Relations between Windsor and Earle hit rock bottom and the longer the situation went unresolved the worse seemed the former's chances of getting anything back for a year of living dangerously. Nobody knew who was responsible, but at one stage his girlfriend Tiffany had been roughed up in the street, and on another his front door is said

"It may be best for the team, because it might make some people realise the thing is falling apart."

Opposite: Classic combo: Piquet, Brabham, France '84
(Alonso/Vandystadt)

to have been blown off its hinges at the height of a short-lived scare campaign.

Brundle's patience lasted until the end of January when, fearful that testing a BT58 at Paul Ricard might be tantamount to acceptance of the breach of his 1989 contract, he finally elected to go Group C racing instead with Tom Walkinshaw's Jaguar team. Like so many he expressed bitter regret that a team as professional as Brabham should be so hamstrung by politics, but added: "It may be best for the team, because it might make some people realise the thing is falling apart. It's already lost quite a few people in the last couple of weeks, so I hope this might bring the situation to a head before it's too late." (See PE Vol.4 No.2)

As McKeever faded into the background after its High Court defeat, Windsor worked hard to bring Middlebridge further into the equation, but there were still hurdles. The deal had virtually been completed by the end of February when Luehti and Widmer pulled back. Within a day Luehti had changed his mind again and it was all on once more, but understandably Middlebridge wasn't so keen. Ecclestone tried to engineer a merger between the equally troubled Onyx and Brabham. In the end Luehti's new representative Dr Trix Eberling stitched a deal together the Monday before Phoenix, Nagauchi's men went ahead and the company changed hands. By then, however, the main FOCA charter flight had already departed for Phoenix with its Formula One car cargo, so the Brabhams had to go late. They arrived on Thursday evening, yet such is the team's continued professionalism that they were ready for qualifying at 8.30 the following day. Moreover, Modena took two sorely needed points after a smooth race. Only two days previously the contract of sale had finally been signed.

So who won in the end? Luehti is still incarcerated, poor Rinland has moved to Tyrrell, signing a two-year contract only days before the Brabham situation was finally resolved, and the team's new BT59 will be touch and go for serious testing prior to Imola. Brundle is now out of Formula One again, even though the matter of his contractual shortfall has been rectified. Windsor, however, was rewarded for his determination and sense of justice and duly paid for his share of Luehti's MRD. Out of character though it would be, he needn't work again for the rest of his life should he choose not to...

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For the millions of enthusiasts who follow Formula One, a major part of the sport's interest is made up of the hidden part of the iceberg. How do you design a single-seater? How do the engineers go about it? How much of what they do stems from the imagination - and how much is governed by the laws of physics? These are the questions you hear: to find the answers, we went to see Gerard Ducarouge, formerly of Lotus, now with Larrousse, whose past and present careers as a Technical Director are rich and varied.

First surprise - and a big one: Ducarouge receives us in a virtually bare office. Where are all the art tables, the overflowing ashtrays, wooden models, piles of parts you'd expect to see? None of that: just a design desk, a round table for visitors, a coat-rack, a minitel system and a computer. So much for the mythology... "Let's establish one basic fact from the outset: it's not one man who makes a Grand Prix car, but a team. The function of a Technical Director like me is to coordinate input from all the different people it takes to design a single-seater - and nowadays they are legion. Computer specialists, composite specialists, aerodynamicists, designers... without forgetting the mechanics, because we need their opinion on the preparation of a car, building it up,

Technical Director: Gerard Ducarouge

by
PATRICK CAMUS
(Translated by Stuart Sykes)

maintaining it. Then there are all our partners on the technical side, the suppliers, the sub-contractors. Tyres, shockers, brakes, engines, and so on..."

Ducarouge's first real task as he sets about a new design is to take a long look at the FISA technical regulations - usually the thickest of all the manuals as each season brings its own crop of modifications, small or not so small. For example, 1990 Formula One cars call for new dimensions in the bodywork around the drivers' legs, the sides of the cockpit, new fixing for the roll-over hoop, greater rigidity in lateral crash-testing, stronger fuel tanks, etc. "If we are not to be in breach of the regulations, we have to assimilate these lists very quickly, because some of these minor modifications in fact imply major reworking when it comes to building the car. Added to which we have the more established basic dimensions imposed by the FISA: length, width, height, ground clearance, position of the pedals... Then comes the most important factor of all: the choice of engine, which governs virtually the whole of a car's architecture - the car, in effect, takes shape around it. V8, V10 or V12? Should the Vee be 60, 75, 80 or 90 degrees? What fuel capacity does it need: 190 litres, 200 or 225?"

These considerations have crucial consequences as regards the weight distribution, wheelbase, even the shape of the transmission. Reverse, traditional or transverse gearbox? For all three exist. A V8 will accommodate a long box, allowing the driver to

stretch out. Not a V12. "From those basic dimensions, fuel tanks, engine and gearbox, you begin to build up the whole car - and the ideas flow. You have to let the driver stretch out, enlarge the tank upwards, backwards or to the sides, and so on. This is all ground-clearing work the computers can handle pretty quickly: they allow us to modify all the parameters almost instantaneously, but their three-dimensional aspect lets us see more or less what the final shape of our car will be."

Next stage: the Technical Director calls on the aerodynamicist to see what lessons the latter has been learning. "Wind-tunnel work is never-ending", says Ducarouge, "but certain configurations are well-known and the results of them just as familiar. Those basic forms are also common to most current Grand Prix cars and we're all trying to refine and improve their performance."

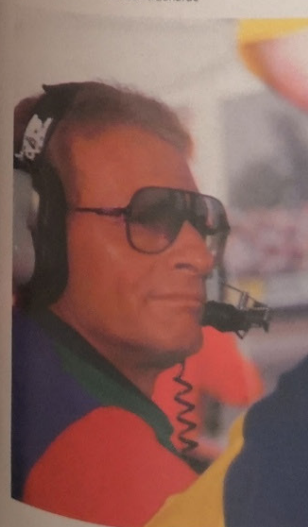
At this stage the overall design of the car is taking shape around a number of fixed data: the size of the air intakes, the area and position of the water radiators, the capacity and lay-out of the fluid systems and the like. "It's on the basis of these established volumes that we have to seek the best compromise between finesse and downforce so beloved by all F1 engineers. It's calvary..."

Of course Ducarouge's starting-point in all this is not really a blank sheet of paper, but the technical file on his previous design, including its aerodynamics. "We all start from existing shapes, experience already acquired. Of course you have to re-

Remarkably uncluttered: Ducarouge at his desk in Lotus days



Face of F1 genius? "Duca" trackside



(Dominique Leroy)



Special relationship: Senna's genius matched that of his team's TD

vises everything periodically, at least every time one of the parameters changes, but the basic framework is there. Usually it's made up of the experience gleaned from the preceding season, both in Grands Prix and in private testing, from wind-tunnel tests and from data we've gathered. You rework the shape of the nose, the front of the tub, the lines of the engine cover, the rear bodywork... And the same applies to the wings which also have to be built to strict dimensional guidelines."

So the primary task of the Technical Director is to lay down the first principles of the car-to-be. And to retain or reject what was good and bad about the one before. A major responsibility, a delicate sifting and sorting operation, and one that can only be accomplished in an endless series of meetings with his lieutenants, and with the drivers whose input should never be underestimated.

Once the preliminary work is done, it's time to delegate specific tasks. One engineer will be responsible for the transmission, another for the suspension systems, another for the tub, another for the bodywork. Why such a degree of specialisation? "In the six years I spent at Lotus I always had the same people working on the same area. So Martin Ogilvie, for example, came up with the bodywork for all six

of 'my' Lotuses; same for the chaps looking after the tub or the suspension. Working that way makes for a store of experience that just has to be effective: the gearbox specialist knows the design of that key component off by heart, knows all about new foundry techniques, all about the materials that have been used or might be used, all about the problems posed by

"... most important factor of all: the choice of engine, which governs virtually the whole of a car's architecture..."

limits on power, the engine speed, or the way suspension systems work that are fixed to the box. Every one of those chaps is razor-sharp in his own field, so the Technical Director relies very heavily on these walking encyclopaedias who can point us towards products that are more and more efficient, reliable and light."

Such specialisation can only increase, which explains the advice

given by Ducarouge to those who admire him and want to follow him into F1. "Advanced technical studies, and a high degree of specialisation in one of the many fields today's F1 requires: evaluation of component and materials resistance, electronics, composites, aerodynamics - the general engineer is dead. That's how it is at Boeing, where whole teams of specialists spend their working lives designing one section of a wing! I recognise that it may be less appealing than in the good old days, but it's the only way ahead for anybody who's looking for results."

One major choice facing the Technical Director and his team concerns suspensions. Pull-rods or push-rods? "The pull-rod system is smaller, lighter, but doesn't allow for as many variations in setting. Working on compression, the push-rod system needs more materials, which means more weight and inertia - but it has other kinetic advantages, so you have to reconcile those differences according to your objectives, what you know about past equipment and the problems it caused, and the information you have from the tyre supplier."

One other factor should not be overlooked: espionage. "F1 is a little microcosm where everything happens very quickly, everything is known about very quickly, and no-one can



Current colours: Ducarouge guides Eric Bernard through his first Grand Prix, France '89

test to the limit. "Even as a static model it's a worthwhile experience. According to the available time you can apply it to a complete car or to a number of sub-assemblies, especially those parts where the safety angle comes in - wheel hub bearings, wishbones, rods and the like. We can measure each component's performance under the strains it will meet - deformation, twisting, flexing; then today's computer-aided design (CAD) with its sophisticated programs can come up with the goods on a keyboard!"

Once these tests are completed, the making of parts can start, whether in the team's own workshops or by a subcontractor - and Ducarouge inclines towards the latter. At the same time a wooden model is made up and all the prototype parts grafted on to it, radiators, fluid circuits, engine fixing points, exhausts, gearbox, suspension and the rest. Thus the finished article can be visualised, any blatant mistakes picked out, last-minute accessories added - the fine points that can be missed in the conceptual stages.

hide a new idea for very long. There isn't a single Technical Director who won't go and see what's happening among the competition - unless he's an idiot! Reading specialist publications also helps us a lot. Trackside we can have a look, but in photos and published drawings we can study specific things in detail. Today's F1 is 19 teams each with 15 engineers - so there's no shortage of good ideas! You mustn't ban yourself from copying them, as long as you first analyse and understand them before applying them, because even the best discoveries your neighbour has come up with may not work on your own car."

Espionage seems to have worked particularly well in the aerodynamic area these past few years. Wasp-waisted McLarens, high, compact frontal area on the Marches, high and narrow intakes on the Benetton... "How can you avoid leaks when all the teams go to more or less the same windtunnels? Keeping data and tests absolutely secret is a mirage - and you mustn't forget that all aerodynamicists are working in the same direction, governed by the same physical laws. Sooner or later that corridor closes in and we all have to go through the same door. Why would the same question meet a different answer from McLaren than from Ferrari?"

Once all the drawings are in place, if time permits, the TD can indulge one whim: having a set of prototype parts made up that the R & D boys can

Motown '87: one of two streetwise successes for Senna on active suspension



What about the body work? Designed by CAD after the final wind-tunnel tests, it is manufactured on a CAM system - by computer too. A machine tool will cut it straight out of the polyester resin material as guided by the CAM program, layer by layer in three dimensions, before being assembled and glued. The hollow mould used for making the bodywork can then be taken, and the same system applies to the tub and the wings.

Deadlines are, one imagines, the thorn in the flesh of designers constantly working against the clock. "Well, we did of course manage to come up with a Formula One car in seven weeks at Lotus, but it's not something I'd recommend! To be in control, to have a clear mind, the aerodynamic work should start in June, with the project completed by September. That gives you October as a breathing space, and to refine the overall concept. Construction starts in mid-November, first car comes out of the workshop in mid-January, and testing can start."

So much for the ideal schedule. Too good to be true... In fact the TD initiates the building of five cars in a phased process, and crossing his fingers that the first one finished won't throw up any last-minute horrors, or that a sub-contracted job will have to be done again - and it has happened. The desirable rhythm would be one chassis every three weeks. In theory, still, the season starts in mid-March with three brand-new cars. Once the first races are over and test sessions completed, with any minor detail changes incorporated, the second phase of building sees two extra cars begun, one to be a test car, the other to replace the first of the series whose life is already run. On the spare parts side, enough stock will be made to equip ten cars.

One time-consuming facet of Ducarouge's work is his relationship with sub-contractors. "It's a major problem, in the sense that we're always asking them for the same thing: the best possible work on sophisticated materials - all to impossible deadlines and preferably for nothing! I'm only joking, of course, but you do have to keep an eye on the financial aspect of these things because costs can simply escalate. Deadlines are another problematical area because a sub-contractor who specialises in suspensions, say, or gearbox housings, has a massive overload in the close season. All the teams, of course, go to the same supplier at the same time with their orders - it's not unusual to see parts



Thumbs up: but Senna's departure from Lotus was already imminent - and Duca was moving on

for a rival French team, two English teams and an Italian outfit on the shelves of a St Etienne workshop! As far as I can I try to put time aside for these very useful people: they've got the tools, the equipment, the experience, they know our problems and the deadlines we have to meet. They have a real command of their subject, and every now and again they see fit to offer us advice. Let me tell you a story from the time I was with Lotus. Don Foster, the specialist who builds suspensions for a number of French, English and occasionally Italian teams, sees me barge into his office with what I thought was the wheel hub of the century, a magnificent component - and tells me straight away it can't be made! He said it would cost me a fortune and put us weeks behind. After hours of rethinking, he proposed

simpler parts that wouldn't take as long to make, would therefore be less expensive, with more or less the same rigidity and weight-saving qualities as mine."

Thought the TD's job was done as soon as the car was completely built, did you? Not at all; he has to see it turn a wheel for the first time, then the second... "Most of all, you've got to make sure it develops along the right lines, not let it get diverted. One key area being the weight. For a designer there's nothing worse than seeing a car that was competitive to begin with, being overtaken as the races go by. Happily for us a good Formula One car is born in the drawing office, not on the track - unless the drawing office has committed some grave error. But then, can you make mistakes of that enormity these days? I'm sur-



Humble surroundings, important work - all part of the TD's supervisory brief

prised by the quality of the ideas and the finish that goes into even the humblest of current Grand Prix cars."

Is this a good thing? Yes, where everyone's sporting chances are concerned, but no when you think of the increasing uniformity of Formula One car design. "There's no room any more for fantasy: you can't let your imagination run riot because the technical regulations have got so much more specific. On top of that, everything now is so much more scientific, we all come up with the same solutions according to identical rules. Should we lament the fact? Yes, in some ways. It must be very exciting to work on a design with complete freedom... But the other side of the coin is that it's getting harder and harder to come up with a bad car! Where the McLaren school of thought has been showing for years now that a classical approach with gradual evolution has its place, the Ferrari 640 and the Benetton have proved that you could still go profitably down a quite different route."

Trips to Bilstein (shock absorbers) in Germany, to Venice to see OZ (wheel rims), calling in on Lamborghini on the way: Ducarouge is often between flights, but always close to a 'phone to keep in touch with 'his' guys - and quickly sort out little technical problems. That's where the computer is useless, it's experience that counts. But Ducarouge this year is feeling frustrated and unhappy. Why so? Because his 1990 challenger is merely a development of 1989, so he didn't have to work flat out. "For me, the most pleasing thing about this job is being there at the birth of a

Grand Prix car. That's where I can be most useful - and if the deadlines are draconian, I'm happier still! It's a fantastic challenge. A Formula 1 team is a commando outfit going on the attack: you always need an officer commanding, you can't just go in willy-nilly. I'm no dictator, I like to throw out ideas, make decisions - even if more often than not I'm terrified of doing something silly, rather than proudly puffing out the chest! Ours is a dangerous calling, after all: if we earn recognition when we get it right, a major mistake can have very serious consequences."

Logically enough, some of these deep thinking men have been turned into stars, especially in recent years. When one looks at Prost's successes one thinks automatically of Barnard, of Murray with Piquet, Mansell and Head, Senna and Ducarouge. Are these background people really after the limelight? They cash in on their services, their reputations, but the real driving force is their love of matters technical and of the sport. For they too are sportsmen in the sense that the fruit of their labours can be instantly seen and weighed up, with the stopwatch as the ultimate judge. "Until that judgement is brought down, we are consumed by fear of having failed. The first tests soothe the nerves, then a good result will bring the confidence flooding back. You mustn't think Formula One engineers are miracle-workers. Each of us applies his own remedies, and mine were learned in a long, slow apprenticeship with Matra, then during 20 years in Formula One."

"I'm surprised by the quality of the ideas and the finish that goes into even the humblest of current Grand Prix cars."

The Numbers that count

Of the 2,500 parts that make up a Formula One car, 400 are given extra special attention, for they have a direct bearing on safety. Their lives are monitored by the kilometre, a task entrusted to the computer. Every Monday morning, returning from a race or private test, the raceshop engineer will give one particular member of staff the details of each chassis and its running. The data are fed into a computer which comes up with a specific listing. In go the kilometres accumulated, and there is an automatic beep if certain limits have been exceeded. For example, a suspension wishbone's life cycle will be set at 5000 kms, a hub at 3000 kms. But with an inbuilt potential of five times longer.

Which is the hardest and slowest part to design and make? The tub takes two and a half months, not counting initial studies and work done in wind-tunnel tests. From the first stroke of the pen, a gearbox housing can take up to four months - the same as a cylinder head - and the innards of a gearbox as much as six months. Tempus fugit...

When designer Steve Nichols quit McLaren after nine years to join Ferrari in 1990 he left something behind: the feeling that winning every Grand Prix was almost a foregone conclusion.

It's not that Nichols has no confidence in his talents or the potential of the Ferrari team. It's just that he realises that beating McLaren is never easy.

"It is a little hard to adjust, going to races and feeling a little less secure, feeling like you may be beaten," Nichols says. The American was talking after the first day of qualifying for the Brazilian Grand Prix. Alain Prost's victory in the Ferrari was still two days away.

"I must admit I don't think I have been to a race since 1984 that I didn't expect to win," Nichols says. "That's not intended to sound egotistical or overconfident. It's just a combination of how good things were at McLaren, and my idea of a positive mental attitude. Because if I didn't think we were going to win, then there was a reason for that, and I would try to fix that reason. It's a strange feeling to think now that there's a lot of problems that could bite us."

One problem that did bite Ferrari concerned an oil tank in the gearbox which caused both Alain Prost and Nigel Mansell to retire in Phoenix. Nichols' holiday back home in Utah had to be cut short and he left America to return to Italy. Ferrari had solved the oil tank trouble by Brazil, and when Senna lost the lead after tangling with Nakajima, Prost was in position to take his Ferrari through to victory.

The Ferraris had been fast during winter testing. Those obliterated lap records, Nichols says, were a result of testing qualifying tyres for Goodyear.

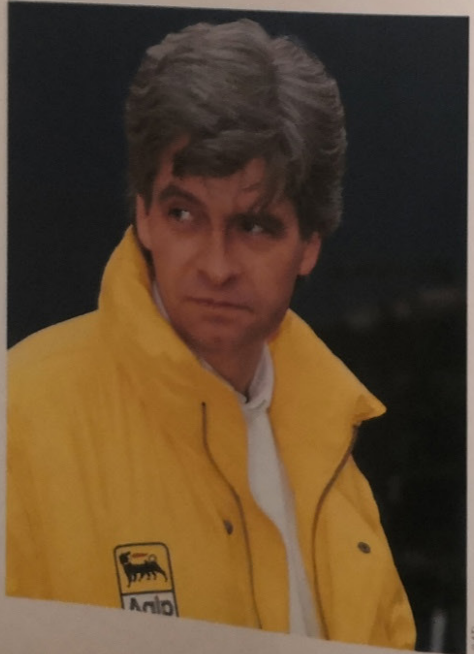
"But I don't place too much emphasis on those quick laps in testing," Nichols says, "because it's relatively easy to go to Estoril and run for four days and eight hours a day and in that period do one quick lap time. It's a lot more difficult to come to a race and do it on demand in one hour in the afternoon. And it's even harder than that to win the race. McLaren is a very good team and very difficult to beat, and so I

Overload Situation?

by
DAN KNUTSON

didn't go to Phoenix feeling that it was a foregone conclusion that Ferrari would win." When interviewed by *Prix Editions* half way through the 1989 season, Steve Nichols seemed set for many more years at McLaren. At that time he had said: "I suppose the only reason to change to another team is to get more money or more control or if I felt that somebody had more potential to allow me to design. That is hard to imagine right now..."

New colours and no foregone conclusions



"I suppose all of that is still true," Nichols says now. "So why did I leave? I guess the main thing is, although I have been reasonably happy at McLaren, for the last three years, since John (Barnard) left and since Gordon (Murray) and Neil (Oatley) came in, I have been in a little bit of a dispute with Ron (Dennis) as to how the whole thing should be organized on the technical design side."

"Ron wanted both designers (Nichols and Oatley) to be exactly equal. I think in most groups and organisations, inevitably, you have to have one person in charge. It doesn't mean that he has to be a whole lot more powerful, but he has to be a little bit above the rest."

Eventually Nichols convinced Dennis to change the structure of McLaren's design team. Still, nothing happened. "After 18 months of me saying it should be this way," Nichols continues, "and Ron agreeing and saying 'yes, but give me time to make a change,' I had had enough."

"As for potential to design, Ferrari has a big budget and all the resources. The one negative might be me not being as familiar with the system and people and so forth. A positive would be it is very interesting because Ferrari does the whole car in house. The engine, the gearbox, the whole thing."

"Money was a problem. Ron has an odd sort of idea that only he and the drivers should make any money out of Formula One. I didn't expect to make a vast sum, and the job satisfaction is more important than the money. But, still, you like to feel that you have been paid what the job is worth. Ron seems to think you should work for peanuts, just for the glory of working for McLaren. His offers were really derisory compared to what anybody else was offering. So much so that when he named his figure, I didn't even bother making a counter offer because we were so far apart."

Having made the decision to leave McLaren for Ferrari, what were Nichols' first impressions of Maranello?

"Compared to McLaren," Nichols says, "Ferrari is a bigger and more complex situation. There are 350 people there. It's difficult to come to grips with it all quickly. My initial reaction, I suppose, was

feeling like I was in a bit of an overload situation. I have a whole organisation to try and learn and deal with, plus a new car, a new driver, a new language to learn... and I have to find a place to live, where to buy groceries, get my haircut and all those sort of silly little things."

"Ferrari is slightly less commercial than some other teams. There's less involvement with sponsors, which isn't to say that there aren't sponsors. Obviously Marlboro, Fiat, Agip and some of the other sponsors contribute a lot towards the budget. But it's not as overwhelmingly commercialised as something like McLaren. Mostly through the race weekend it's just the team there. We solve the problems together and there's not a lot of outside interference or distraction." Nichols may be in a slight overload situation, but it hasn't affected his sense of humour. His soft chuckle can frequently be heard on the tape of this interview. He's still the same quiet, easy-going and relaxed person that he was in his McLaren days. And there's a twinkle in his eyes which seems to say, yes Formula One is serious business, but that doesn't mean we can't have fun at it.

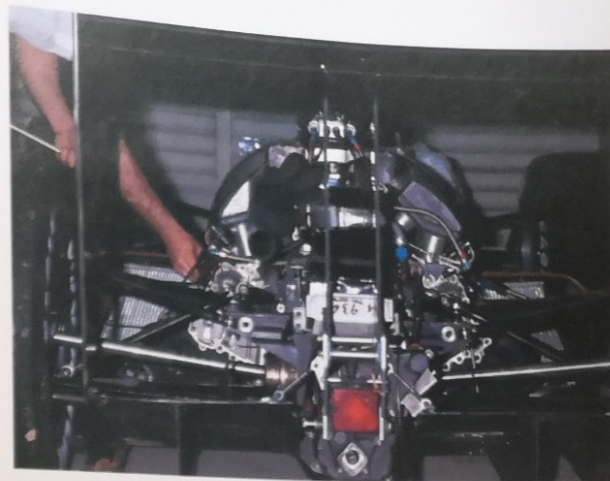
Another of the new things he had to deal with was the semi-automatic gearbox. What does he think of it?

"It's an advantage," Nichols says, "but it's not for free. It weighs more and it's more complex, and that means more chances for failure. I wouldn't consider abandoning it, although it certainly is not 100 percent reliable yet. It's like anything else on the car. The cars get more and more complex, more and more technological, and they go quicker and quicker. But there is a lot more potential for things to go wrong. That means you have to be a lot more conscientious about getting everything absolutely right."

What about the car itself, the 641 chassis?

"Generally the car works quite well," Nichols says. "It's well designed and engineered, and the drivers are quite happy with it. Even so there are a lot of things on it that I would do differently, as I am sure there are a lot of things that John (Barnard), the original designer, would do differently now."

"For (next year's) 642 there are quite a lot of things, detail improvements and some major things, that I would like to do. But I think the car works well enough as a concept that it's worth developing. I feel, as does Barnard who designed the original



Business end: whose business is it?

640, that you should try to do a car that's good enough so that you can develop it for two or three years. We are using it now for the second year, and I think it's got possibilities that we can use a variation of this for 1991 also."

Former Williams designer Enrique Scalabrini was responsible for this year's car. Who will design the 642?

"We will have to get together to contribute what we can towards the new car," Nichols says. "Enrico was engaged by Ferrari to be chief designer at a time when I was regarded as being unavailable. So I agreed to

"No matter how brilliant one person is, can he do as much as 5 people working together as a team?"

come on the basis that I would look after things at the circuit while Enrique will be based at the factory to keep things progressing there. Both of us will try to contribute as much as we can and work together on developing new ideas and new concepts for the design of future Ferraris. My job brief also includes research and development projects to look into new things to incorporate into the design in the future." Nichols says he left McLaren because he didn't like working in a design partnership. Isn't he now in a similar situation at Ferrari?

"Yes," Nichols agrees, "there are

two of us, like at McLaren, which was a situation which I didn't particularly like. But at least here there is supposed to be some difference. I am supposed to have certain areas of responsibility and he has certain areas of responsibility. It seemed at McLaren that it was supposed to be absolutely the same. But, yes, it is a similar sort of problem: You have someone there that you have to cooperate with."

"I don't know if that is necessarily all bad. I have said before that Formula 1 is big enough now and complex enough that a team needs more than one star designer. You need quite a few talented, experienced people to do the job. Maybe that means that to be successful all of us are going to have to learn to work together. No matter how brilliant one person is, can he do as much as five people working together as a team?"

Speaking of working together, how is Nigel Mansell to work with?

"He's a real sort of a head-down, aggressive, go-for-it driver," Nichols says. "He's good, particularly in his racing performance. He's the old British bulldog, grabs it by the neck and won't let go, sort of competitor. That's been one of his strongest points."

"Prost, by comparison, maybe tries to do it with a little bit more finesse. He tries to get the car absolutely perfect and absolutely to his liking, and then he goes well. Maybe he isn't as good at dealing with adversity."

"Nigel, it seems, no matter what sort of junker he's got, or if he's had trouble in practice, is still going to wring its neck in the race until he goes fast."

The recent announcement that Footwork Arrows will use Porsche Formula One engines from 1991 onwards will effectively increase the team's annual engine bill from US \$3,000,000 to approximately US \$15,000,000, which is more than the total budget of many teams. Has Footwork got a good deal? Does US \$15,000,000 per annum guarantee success? And does Porsche's record in Formula One automatically warrant this level of expenditure?

Porsche first raced in Formula One in 1957, running a Formula Two car in the German Grand Prix in an attempt both to make up the numbers and to create some local interest for the Nurburgring crowd. Formula Two Porsches continued to appear in Grands Prix sporadically until 1960, when Hans Herrman earned the company its first championship point by finishing sixth at Monza; at the end of the season Formula One engine capacity was reduced from 2.5-litres, and the Formula Two Porsches became Formula One cars!

With Dan Gurney and Joakim Bonnier as "works" drivers, the well-tried Porsches were expected to do well in 1961, but their air-cooled flat-4 engines were no match for Ferrari's V6's

Porsche in Formula One 1957-1963 1983-1987

by
DAVID PHIPPS

and they did not handle anything like as well as the underpowered but very effective Lotuses. They nevertheless had some reasonable results, Gurney finishing second at Reims, Monza and Watkins Glen, and the Porsche management was sufficiently encouraged to build all-new cars, with all-new flat-8 engines, for 1962. These initially

had transmission problems, and were not even entered for the Belgian race, but Gurney came back strongly to Nurburgring and fifth at the Glen; in the other races transmission problems of one sort or another intervened with monotonous regularity. Bonnier also had his share of mechanical trouble, and managed only a fifth and a sixth in the course of the season. In the whole of 1961 and 1962 Porsche scored only 42 Championship points.

Transmission apart, the 1962 Porsche was very promising, though the air-cooled Flat-8 struggled to match the output of the water-cooled Coventry Climax and BRM V8's. However, management had expected better and withdrew from Formula One to concentrate on Endurance racing, in which Porsche was notably successful for many years provided the opposition was weak - which it generally was. (When major manufacturers like Ford entered the fray they usually won, but for the rest of the time Porsche - and Porsche customers - were the leading contenders.)

From 1964 - 1983 there was no Porsche presence in Formula One, but then Ron Dennis and Mansur Ojeh of McLaren International realised their naturally aspirated Cosworth V8's no

longer had any chance against the turbo engines used by most of the opposition, and commissioned Porsche to build the 1.5-litre turbo-charged TAG V6. It was very much a customer engine, with "TAG turbo-Techniques d'Avant Garde" on the can covers and nothing to betray its origins except a small "made by Porsche" on the plenum chambers. Its configuration and external dimensions resulted from endless discussions with McLaren's John Barnard, who insisted that the engine should not have an adverse effect on the car's aerodynamics. TAG also funded an all-new Bosch electronic management system, built especially for this engine; there was even talk of commercial applications for the TAG V6, one of which involved helicopters!

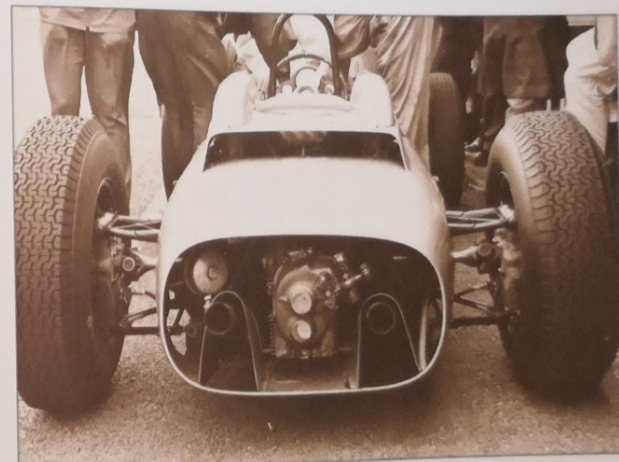
By this time, of course, Porsche had considerable experience of both water-cooling and turbocharging, but there were many problems in the early races, both with the engines and with the cars in which they were fitted. At Zandvoort, for instance, Lauda's car simply wore out its brakes, which had been designed to cope with a 500bhp Cosworth engine; even on its debut the TAG turbo produced considerably more than this, as it demonstrated by its speed on the straight. Despite turbo failures and engine failures at the following races, McLaren looked forward to 1984 with a degree of optimism.

As is customary, McLaren's 1984 car was only finished a few days before the first race, at Rio, but Prost won it comfortably and Lauda would have finished second but for an electrical problem. At Kyalami Lauda finished first and Prost second; the TAG-powered McLaren's clearly were going to take a lot of beating. At Zolder they beat themselves with engine problems, and at Imola Lauda again had engine trouble (piston failure), but Prost won despite an uncharacteristic spin, caused by an intermittent fault in the braking system. Lauda came back into the picture by winning at Dijon, where Prost had major problems with a loose wheel, and then Prost had a half-points win at a rain-swept Monaco, where Lauda spun out of third place just before the race was stopped.

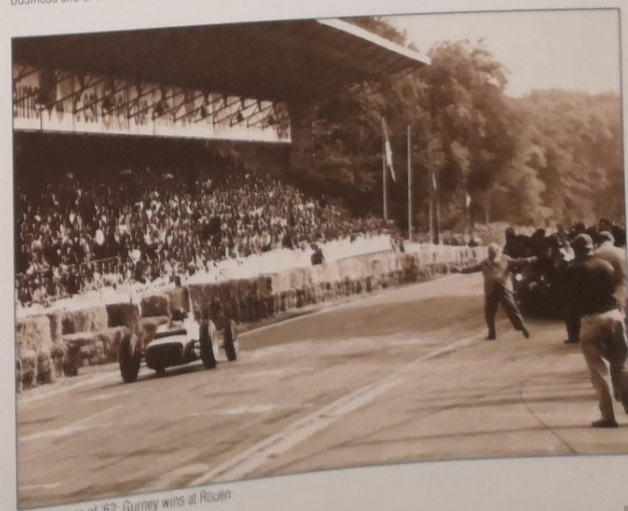
In Canada Lauda finished well ahead of Prost, but they both had to give best to Piquet's Brabham-BMW. At Detroit Piquet won again and Prost finished a distant fifth; Lauda was never in the running and retired with a bad misfire. And at Dallas



France '61: Baghetti's Ferrari heads the Porsche team of Bonnier and Gurney

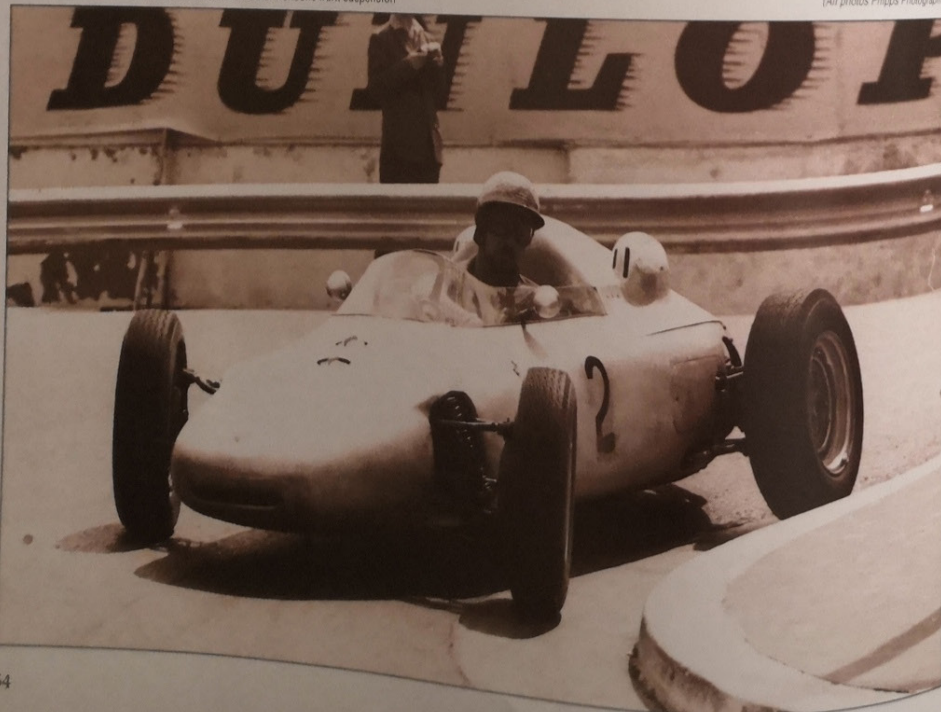


Business end of the '62 Porsche - not quite up to competing with Coventry Climax and Ferrari's V6



Sole success of '62: Gurney wins at Rouen

Bonnier at Monaco in '61: note the Porsche's double wishbone front suspension



(All photos Phipps Photographs)

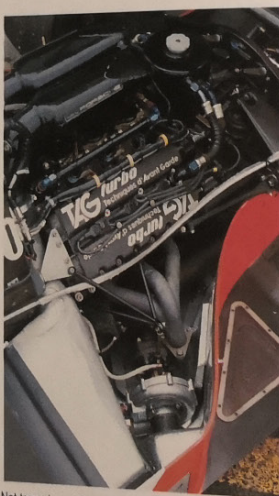


Planning for Porsche: Messrs Dennis and Ojeh in 1983

McLaren's season reached its lowest point when both Lauda and Prost nudged the walls which lined the gravel-strewn circuit, Prost while comfortably in the lead.

Back in Europe McLaren-TAG fortunes improved enormously. Lauda won at Brands Hatch, where Prost had transmission trouble, and then Prost and Lauda finished 1-2 at Hockenheim. Lauda won in Austria, where Prost spun off an oil slick, and there was another Prost, Lauda 1-2 at Zandvoort - with only one other car on the same lap! At Monza it was Lauda's turn again, Prost's engine having failed in the opening laps, but at the Nurburgring Prost led from start to finish and Lauda was fourth.

The Constructors' Cup having been clinched much earlier, Lauda and Prost went into the final race at Estoril 3.5 points apart, 66 to 62.5. All Lauda had to do to become World Champion was finish second to Prost, and this is precisely what he did - though he was as low as twelfth in the early laps and looked unlikely to make it until the brakes of Mansell's second-placed Lotus failed in the closing stages. Although the fight for the drivers' championship tended to overshadow it, the most significant statistic of the season was that TAG-powered McLarens had won 12 out of 16 races. Neither the engine nor the car had been trouble-free, but 12 wins out of 16 is very impressive, and was not bettered until the Honda-powered McLarens won 15 races out of 16 in 1988. Admittedly McLaren-TAG



Not tagged as a Porsche unit: turbo power in the '84 McLaren



Right: Bosch system for '84 and P1 and P2 were the usual results!

managed only three pole positions in 1984, all of them to Prost, but the team regarding qualifying boost as some others, notably Brabham-BMW, for whom Piquet secured no fewer than nine poles! All things considered, it was a pretty good first full season for the TAG engine!

By 1984 standards, 1985 was only a moderate year for McLaren-TAG - and a disastrous one in terms of reliability as far as Lauda was concerned. Prost nevertheless won five races (six if one includes Imola, where his car was disqualified for being underweight) and was undisputed World Champion. By mid-season, however, there were signs that Honda was at last getting its act together, and that the "race-boost" 750bhp of the TAG engine would not be sufficient in 1986 - not even in McLarens driven by Prost and Rosberg, who moved over from Williams following Lauda's retirement from racing.

In the event, Williams-Honda completely dominated 1986, Mansell winning five races and Piquet four, but Prost also won four and picked up sufficient seconds and thirds to become World Champion again when Mansell's tyre failed at Adelaide. But even then it was a close thing; Prost had to win to become champion, and his fuel computer said he would not even finish; with Piquet's Williams-Honda close behind him, he decided the only thing to do was press on; not for the first time, the computer was wrong!

Like Lauda in 1985, Rosberg had a very disappointing season - first with the McLaren's handling, which simply did not suit his driving style, and then with reliability; he finished only

once in the second half of the season, though the reason was generally car - rather than engine related.

Some time before this, Ron Dennis had decided that he would have to find an alternative source of engines - and preferably one which would not send him invoices! He quickly disdcounted Ford and set his sights on Honda, who at the time were supplying both Williams and Lotus. Fortunately for him, relations between Williams and Honda were strained - mainly because Frank Williams would not agree to provide a car for Satoru Nakajima - and after protracted negotiations Honda agreed to switch to McLaren in 1988.

Before this McLaren had to get through 1987. Furthermore, they had to do so without John Barnard, who had joined Ferrari. They started well enough, with two wins in the first three races, including a Prost, Johansson 1-2 at Spa, but subsequently Prost managed only one more win and the team was hard-pressed to retain second place in the Constructors' Championship.

"Is it too late for Arrows to help Porsche at the design stage in the same way that McLaren did?"

Nevertheless, the McLaren-TAG association had been a fruitful one, with 25 wins, three Drivers' Championships, two Constructors' Championships and 405.5 Championship points in only four years. It is difficult to say how much of the credit for this is due to Porsche (and Bosch) and how much to McLaren and the McLaren drivers, but the engine obviously was very good and in 1984 at least was the best one around, except perhaps in qualifying trim.

Can Porsche do the same for Arrows? Is it too late for Arrows to help Porsche at the design stage in the same way that McLaren did? One thing we can be sure of - based on the quotes made to other constructors - is that it will be very expensive. But if it helps Arrows to become regular front-runners, Mr Ohashi will probably decide that it was well worth while, whatever the cost.



Above: Lauda takes a brilliant Brands Hatch victory in '84
Below: Spa '87 - and Prost is leaning on it!



A quarter of a century has passed since John Surtees sped to his World Championship title at the wheel of a scarlet Ferrari, the crowning glory of a career which had already seen him scale the pinnacle of motor cycle racing as one of its most gifted exponents of all time. He stands alone as the only man to have made the transition from two wheels to four at the highest possible level, yet his critics still believe, in part, he was his own worst enemy, failing to realise his true potential due to a combination of perfectionism and bloody-mindedness.

Yet without such outstanding personal qualities his obituary would almost certainly have been written at the end of 1965. Surtees suffered appalling injuries after crashing his own Lola sports car during practice for a race in Canada. For several days his life hung by a thread. Yet he fought back to fitness with a special brand of resilience and determination so characteristic of his whole approach to life in general, and his chosen sport in particular.

Reflecting on his glory days, Surtees has mellowed considerably with middle age. He remains undeniably trenchant, but perhaps sees his racing years in a clearer perspective. The autocratic gloss which so often seemed to appear counter-productive when applied to his own Formula One team throughout the 1970's now seems to have softened considerably. Although he no longer retains an active involvement in motor racing, he remains well

John Surtees: "I Tried Not to Give Them a Chance"

by
ALAN HENRY

in touch with the sport that made him famous. And he looks back with mixed feelings on the way in which it has evolved.

"The major difference over the past two decades is the way in which television coverage has drawn vast sums of money into the sport," he observes. "This has caused what amounts to artificial inflation within Formula One, the teams operating on enormous budgets and drivers being paid very much more than they used to be. But the basic objective of the sport remains unchanged. Whether it be manufacturer or driver, the true competitors want to win races, no matter what sort of money is involved."

Bred from a purist racing background and weaned at a time when fuel, oil and tyres companies were motor racing's traditional paymasters, it is perhaps not surprising that Surtees rather resents the intrusion of such commercialism. "I don't necessarily like it," he concedes, "but I can see the benefits provided by these substantial budgets. They have removed the financial constraints under which drivers, engineers and team owners have operated in the past."

Surtees knew all about financial constraints during his racing days. Having fallen out with Ferrari and quit the prestigious Italian team midway through 1966, he never again enjoyed the Championship-winning success which came his way in 1964. After briefly flirting with the Cooper team he spearheaded Honda's early foray into Formula One in 1967 and

'68. But the Japanese manufacturer's racing programme was run on distinctly frugal lines, with none of the massive investment which has been the hallmark of their efforts in the 1980's.

But Surtees felt a particular empathy with Honda, in much the same way as he had been drawn to Ferrari at the start of 1963. In the case of the Italian team, it was simply a case of exchanging one autocratic boss for another. On two wheels he had driven for the MV Agusta team, presided over by the authoritarian Count Domenico Agusta, while Enzo Ferrari was clearly out of much the same mould. Understanding the Italian mentality was a crucial key to Surtees' success in Italy. In contrast with the way recent Ferrari Technical Director John Barnard steadfastly refused to live in Italy, Surtees embraced the Italian way of life with relish. Yet his partnership with Ferrari ended prematurely.

Even Enzo Ferrari's death last summer failed to persuade Surtees to break his silence over the reasons behind this rift. But despite his bitter disappointment, he recalls his time at Ferrari as some of the most pleasant years of his career.

"I'm not under any illusions, some pretty bloody awful things went on at Ferrari while I was there. But perhaps it's a sad reflection on motorsport that, after I subsequently had a team of my own and began dealing with drivers, I can now understand many things which were a mystery to me



Poles apart but a good partnership: Hailwood, Surtees, Belgium 1972

when I was at Ferrari. But, of all my times in racing, relative to morale, I probably experienced both the highest and lowest moments while I was driving for them."

Whereas Surtees' warm feelings for the Italians attracted him to Ferrari, it was his motorcycle racing instincts that swayed him towards joining Honda's Formula One programme at the start of 1967.

"I had seen what they had done in motorcycle racing," he explains, "and there I believed they could do it again in Formula One. Yet, in some ways, the biggest problems they faced were from within the company - just as it was at Ferrari." He admits that he was "anguished when the programme finished" at the end of 1968, yet feels that perhaps the project laid some worthwhile groundwork for the future.

"In many ways Honda's current success in Formula One makes me very happy, because it tells me that my original decision to join them was not stupid." A man who keeps his emotions very much to himself, Surtees admits to being touched when he received an appreciative telegram from Honda's Mr Tadashi Kume, after Nigel Mansell's splendid 1986 British Grand Prix victory in the Williams-Honda. The text read "Without you, this would not have been possible today." Kume, now one of Honda's most senior executives, had

worked with Surtees on the Formula One project almost twenty years earlier.

Surtees remains very much a motor racing traditionalist, critical of the motor racing safety crusade spearheaded by Jackie Stewart in the late 1960's. "I didn't agree with him then, and I don't agree with him now," he says tersely. "I particularly took issue with the trend of altering the circuits to suit the requirements of the cars. The race tracks themselves should have been allowed to control speed rather than the other way round."

Having established his own team in 1970, Surtees gradually phased his

retirement from the cockpit during 1972, although he continued to test his own cars for a couple more years after that. Many of those who drove for him found him difficult to please, but his motorcycling roots ensured that he got on particularly well with Mike Hailwood, even though they seemed unlikely bedfellows. On the one hand Surtees, serious to the point of appearing somewhat dour, on the other Hailwood, the enormously popular archetypal rip-roaring hell-raiser. But they had a deep sense of mutual respect based on their motorcycling achievements and Hailwood's victory in the 1972 European Formula Two Championship was one of the few international successes to come Team Surtees' way.

Surtees closed down his team at the end of 1978, after which he concentrated on various property interests in rural Kent, his particular enthusiasm being the restoration and refurbishment of historic buildings. With his wife and young family, he lives in one such manor house, lovingly restored over many years. The painstaking attention to detail lavished on his home reflects that quest for perfection which he sought, but did not always find, throughout his motor racing career.

At 55, John Surtees seems more relaxed than ever. He may bang away at his favourite motor racing hobby-

"Go really hard on the opening lap, and by the time they've collected their thoughts you've already built up a lead."

John Surtees - World Champion 26 years ago



(Photo: Photographica)

Laying the foundations: Surtees - here in Belgium in 1967 - had great faith in F1 newcomers Honda



(LAT)



"Il grande John", as the Ferrari fans knew him, in car number 2 en route to Monza victory and the 1964 World Championship

Less successful in his own car: John in a Surtees at the 1971 British Grand Prix



horse but still manages to keep a balance between his affection for times past and enthusiasm for new developments.

He is particularly impressed with the progress made in Grand Prix car technology. "The improvement in constructional methods is the biggest single advance since I was racing. In the old days, when I went to Nurburgring, for example, pounding over the bumps would cause the tanks to split or crack, so I would often finish the race sitting in a bath of petrol. Now we are seeing drivers surviving accidents like the one that befell Gerhard Berger at Imola this year. That is incredible, a very positive development."

Deep down, of course, the competitive fire still lurks. He speaks of Ayrton Senna in approving tones. "He handles the opposition in much the same way as I tried to in my motorcycling days," he says approvingly. "Go really hard on the opening lap, and by the time they've collected their thoughts you've already built up a lead. I did that time and again when I was racing. It wasn't that other people were unable to beat me, but, like Senna I tried not to give them a chance."

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The first time it rolled out into the pit lane and into public view in 1987 the Camel Lotus 99T caused an enormous stir. In the cockpit Ayrton Senna raised his arm to get the starter motor connected - it was a signal that was to send shock waves up and down the pit lane. The engine revved into life and the entire chassis rose two inches off the ground. "What the hell is going on?" said the man next to me. Of course, it was 'active' suspension - or more simply computer controlled suspension.

Although it had come and gone once before, 1987 was the year that marked the arrival of computerised suspension in Formula One. Lotus won two races with their system, almost won two more and Williams, with a radically different approach, won another. Even the doubters had to start sifting through their budgets to start a development programme.

Lotus started development in the early '80s. Williams joined the race pre-1985. Benetton have been involved in research since 1987, Leyton House since the spring of 1988 and recently (probably with the arrival of Senna) McLaren.

But knowing computerised suspension systems can give an advantage and getting them to work are two different things, as everybody has found out. Although Formula One designers are unanimous that 'active' can give an advantage, they are applying the original idea in different ways. Leyton House, in the search for the road holding that has eluded them

for the last couple of seasons, may well debut their system in the next couple of months. Williams, on the other hand, have just taken 'active' testing off their race programme for 1990 while research continues at the factory. Benetton have axed their 'active' test drivers and left the development to the regular drivers, while McLaren, curiously, are not even willing to talk about their system. "Yes, it is something we feel has potential," says project engineer Neil Oatley, "but this is not an appropriate time to discuss it."

'Active' was born out of the research into ground effect at the Cranfield Institution of Technology in Bedfordshire at a time when Lotus were developing their type 88 twin-chassis Grand Prix car.

"We wanted separate load paths for the aerodynamic loads and the inertia loads on the car and that led us to explore the 'active' system which had come out of an instrumentation programme we were doing at Cranfield," said engineer Peter Wright, who has been the leading exponent of 'active' for the last decade.

The theory had been around since the 1940's but nobody had tried to put it into practice. By late 1982 an 'active' system was running in a turbo Lotus Esprit and a Lotus Formula One car.

Ironically FISA finally came up with a set of regulations which banned ground effect and the main reason for running 'active' had disappeared. But there was a stroke of luck.

Renault engines, turbo ones, were to power the Lotus for the first time that season but they only had enough engines for one car. The other, driven by Nigel Mansell, had a normally-aspirated Cosworth engine, and there was nothing to lose by experimenting with 'active'.

"It raced at Brazil and in Long Beach. Mansell liked it a lot more at the time than he has said since. He did a superb job developing a novel system. We were sticking our necks out. The car qualified midfield in both races and completed both of them. There have been worse disasters than that in motor racing!"

There were major changes within Team Lotus and the death of Colin Chapman had a profound effect on the 'active' programme. It went down the road to Lotus cars and development continued mostly behind the scenes.

In 1987 'active' was returned. Finance came from Group Lotus, the road car division which Chapman's widow, Hazel, had been forced to sell. "In 1986 Lotus said the flat bottomed cars had reached a stage of development where 'active' was applicable again," said Wright.

Keen student: Senna's eye for detail was a major help to Lotus in '87

Suspended Animation

by
BYRON YOUNG



Williams had come to the same conclusion. They had been working on their own system since 1984 and ran it for the first time a year later.

But Group Lotus' reasons for returning to motor racing were markedly different this time. "It was our edly different this time. 'It was our way of making a statement to the world about where we were with 'active', what we were doing and it was also good technical motivation. The real test was to demonstrate it could be reliable and safe enough."

The system was an undoubted success. As well as victories in Monaco and Detroit (where the system had led to noticeably less tyre wear and thus done away with a pit stop) it should have won two more races - at Monza when Senna fell off and at Portugal where Lotus had an engine problem.

"We made a lot of technical progress," says Wright. "From 32 starts (two cars) we had only two non-finishes caused by our system which was no more than the engine caused."

Wright openly admitted there was another reason, too, for not continuing the programme. Eventually there would be a major accident caused by 'active' failure - everything on a racing car causes an accident if you use it for long enough - and that would have an enormous impact on the marketing reasons for introducing it

"When one team has a system which is very reliable that car will win every time."

into Formula One. But there were other reasons too. The Formula One programme diverted work away from the road car system Group Lotus was selling to major corporations around the world.

Perhaps the biggest reason of all was money. That one season cost Group Lotus in the region of £2 million. But there was a crucial lesson learned along the way.

"The system interacted with the tyres and we realised that to make significant progress we needed to be working closely with the tyre manufacturer and radically changing the tyres or there would be nothing gained by competing for another season," said Wright.

Formula One racing was getting almost maximum from the tyres but if tyre construction could be changed that maximum could be pushed far



Here, at Monaco, his hard work bore fruit



Monza '87: Piquet in the 'active' Williams heads Mansell's conventional car - and it stayed that way to the finish

higher. 1988 was a single tyre formula and that ruled out competing for another season. "It wasn't in our best interests to continue supporting it so we pulled out," added Wright.

The biggest coup for Wright came sitting in the airport lounge after the last race of the season in Adelaide. He wanted a simple truth from Senna. Did 'active' work? "He told me: 'At the end of the day I believe it made an improvement to the car.' I don't think he was telling me what I wanted to hear."

That 'active' worked was now fully accepted, but with the disappearance of the turbo powered engines, and the limit on power, the disadvantages of the system became more serious. Both the Lotus and Williams systems weighed around 20 kilos, then there was the added complexity and increased likelihood that something could go wrong. Added to that was the increased expense and the drain on the engine's power to run the 'active's support systems.

"The various pumps cost horse-

power which is perhaps something you cannot afford to lose now that we are no longer running 900bhp engines," says Lotus Technical Director, Frank Dernie. "Then there is the weight. An extra kilo equals one horsepower. A 12-cylinder engine is pretty heavy in the first place and it is difficult to make a sound car which is on the eight limit. If you manage it and then add 20 kilos, then the pumps take 20hp you are losing 40 horsepower. Right there you are talking about one second per lap."

"And when you consider it will probably cost you £1 million, I don't think it's a goer unless you've got money to burn and the resources to run an 'active' and non-'active' car," added Dernie.

Leyton House designer Adrian Newey is among the newer converts to the benefits of computerised suspension systems. But he is not convinced, like Frank Dernie, that the Lotus system is necessarily the best.

"In a perfect world it is the ideal system but you'd need 15 years and a military-sized budget to get it ideal on one track on one particular day. It was just too complicated. Our system is a lot simpler. It uses conventional springs and dampers and the active part is to try and maintain the ride height we want," he said.

Leyton House started designing their system in the spring of '88 and ran it in the latest 901 in April. "If the performance gain is worth what is inevitably more aggravation we will run it this year. But it's not worth it for 0.2 of a second," he added.

The Leyton House project involves three full-time electronic engineers. "The weight of 15 kilos is the major problem for us but the horsepower requirement isn't too bad," said



Piquet, now with Benetton, is keen as the system - and his new team are working along those lines

Newey. "The advantage of controlling the ride height is to be able to have a certain optimum position for the aerodynamics."

By 1988 the Williams system was far more advanced. Initially mechanically controlled it evolved to an electronic brain. Lotus claimed to own the name 'active' so Williams called theirs 're-active'.

Patrick Head: "Ours is a Citroen-type system with hydraulic oil and the springing medium is the compression of a gas. The flow from the damper out of the strut and into the spring unit goes through a damping circuit. So the normal suspension of the car is very conventional although the loads are transferred hydraulically. Super-imposed on that is a ride-height control system which has a very high response, something that is not always the case with the Citroen system."

But was all the extra aggravation worth it? "I'm cautiously a fan, yes, but there are problems. When an engine has a problem it just stops but if it's the suspension the consequences can be greater," he said. When the system did exactly that while Thierry Boutsen was testing it in February it was sent back to the drawing board. "We have decided at the moment that the reliability level of the electronics is not high enough and we have not got a system that we would regard now as being raceable. But you must remember we raced our system at Monza, and won first time." The reality, though, was that it was a lucky win and the system performed perfectly - something the team have not been able to achieve since.

The Williams team will make a decision later this year whether it will be included in their 1991 race programme but for 1990 it must take a back seat.

Among the drivers Nelson Piquet is undoubtedly the biggest fan of space-age suspension. "It was one of the main reasons he came to Lotus, because he thought 'active' was such an advantage," said Dernie. "He was certainly annoyed at me for not having it on the Lotus last year."

But if Piquet was a convert, Mansell would have happily thrown the entire system into a crusher. Dernie again: "Nigel thinks 'active' is dangerous and he thinks he has been 'had off' quite a few times by the active suspension both at Lotus and at Williams. But he told me it had done several things which it couldn't possibly have done." When it did work though - however temporarily - Mansell insisted on having it too. But he was never comfortable pushing a 're-active' car to the limit.

Piquet and Nannini have taken over development testing of the Benetton system which began in 1987 with backing from Ford and the development drivers, among them Johnny Dumfries, have been ditched.

"It makes more sense for our regular drivers to do the testing, rather than get in others, because that way we have a more up-to-date comparison with our current cars," says team manager Gordon Message. "We have half a dozen people working on our programme, not all full-time. I couldn't say if we will race it this year - a lot depends on reliability and the rest on performance."

Thierry Boutsen feels very strongly about computerised suspension systems. "The potential is fantastic. When one team has a system which is very reliable that car will win every time." And here was a man whose enthusiasm for the system had been moderated by a dramatic failure in testing. Perhaps the truth is that no-one can make it work - and no-one can afford to ignore it either.

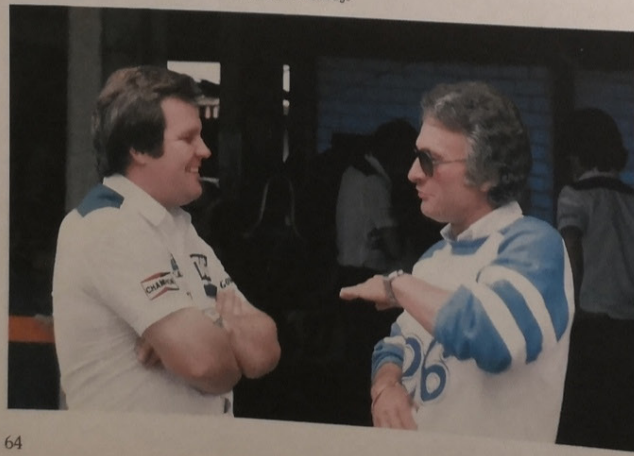


Definitive statement: Senna, Detroit, 1987

Williams have not raced the system recently (this is Patrese in Rio last year) but are keeping tabs on it in testing



Two proponents of the system: Patrick Head (left) Gerard Ducarouge



Gauld Mine!

This Month: Murray The Lip

It is a pop knock M Prix racing occasional commentator. From lia he is the sport. It amuses me Murray and they rarely h entails. Indeed tions in that ev can do better I first met M basis back in 1 the fledgling cided to do a l motor racing circuit, now b split concrete As I was thei time I was told get a profess this important act as his foil generally keep That man w those days he but his father revered as a g commentator Murray had immediately No matter w him, Murray ast and he fai tion of the job sion didn't h they too mad instance our very shaky an located it so t us shining in white TV scre to use to comi first race and that familiar until the flag I raise my hatt see a thing o way round t madly, he tu eyes and shr this he breath luckily I knew the rough shape of the

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One-Track-Mind

COMING UP IN MAY... THE SAN MARINO GRAND PRIX

The Imola circuit is located close to the centre of the pretty town of Imola, 30 kms south-east of Bologna - not in the Republic of San Marino. This is a clever ploy to guarantee F1-crazy Italy two Grands Prix per season.

Getting There

By car: from Bologna, take motorway A14 towards Imola/Rimini (toll payable). The main SS9 Via Emilia Bologna-Imola is free - but not of traffic. From Rimini, same road numbers apply - in the Bologna direction! All local roads are crowded on race day - Imola-Bologna can take four hours after the race.

By train/bus: Bologna is easily accessible from all over Europe via Milan. Bologna-Imola on the Rimini train

Autodromo Dino e Enzo
Ferrari
Viale Dante
I-40026 Imola
Italy

Tickets: SAGIS Spa
Via Calori 9/D
I-40122 Bologna
Italy

Tel: (39) 51 522 075
Fax: (39) 51 552 518

Any colour goes - as long as it's Italian and tending towards red!

takes about 30 minutes, and Imola's station is a 15-minute walk from the circuit. Bologna's bus station, just 300m from the central railway station, offers a service to Imola that takes about 90 minutes.

By air: Bologna's international airport, though small, accepts flights from all over Europe, often with a stop in Milan or Rome. There is also an airport in Rimini, though not of international standard. If Bologna flights are full, try Milan and proceed from there by rail.

Circuit and city are set in the lovely vineyards and fruitgrowing country of Emilia Romagna, with dozens of hotels and pensions in the area. Imola's own hotels are usually booked out well in advance, but Bologna's tourist



The tifosi - only flag worth flying, even though Senna won in '89



board located outside the station has an effective accommodation service. You can camp at the circuit, whether in mobile homes or tents, but the tifosi or Ferrari faithful are no friends of the light sleeper!

For the gourmet, all main towns in the area, and quite a few of the smaller ones, boast excellent cucina casalinga, or home cooking, while an up-market alternative of international renown is the San Domenico in Imola's central via Cavour. Spaghetti bolagnese is, of course, of local origin; regional wines include Lambrusco, sparkling on the palate, but it's hard to go past a good old Chianti.

Some sponsors organize open-air festivities in Imola's main square on the Saturday evening, though disco-lovers may need to look to Bologna or Rimini. The latter has gorgeous beaches, Bologna offers museums and buildings of historical interest, Imola

has a castle - and the home of Ferrari at Maranello is not so far away. Shop at the circuit - as long as you want something with the Prancing Horse! But Imola and especially Bologna have outstanding shops for chic Italian clothes and leather in particular. Just keep an eye open for pickpockets...

Being There

The 3.132-mile/5.040 km Imola circuit is hard on both drivers and cars, tough on fuel consumption, chassis set-up and brakes.

Previous winners:

1989	Ayrton Senna	(McLaren MP4/5)
1988	Ayrton Senna	(McLaren MP4/4)
1987	Nigel Mansell	(Williams FW11B)
1986	Alain Prost	(McLaren MP4/2C)
1985	Elio De Angelis	(Lotus 97T)
1984	Alain Prost	(McLaren MP4/2)
1983	Patrick Tambay	(Ferrari 126C2/B)
1982	Didier Pironi	(Ferrari 126/C)

A LAP OF IMOLA WITH IVAN CAPELLI

"One thing I have learned about Imola is that if your car goes quickly there, it will also go well at other circuits. That's because getting a well-balanced car is really difficult at Imola, as it's such a technical circuit.

"You have to make the car turn in well - that's one of the keys to a quick lap. Into the Tosa hairpin you brake from 186 mph to 62 mph, so you need good brakes and good turn-in, especially as the track is a little bumpy there.

"You can overtake at the hairpin, the Acque Minerale chicane and the double-apex Rivazza, but it's very difficult there though it can be done... I really enjoy driving a fast lap at Imola. I won there in F3, finished second in F3000, so I have good memories of the place."

One-Track-Mind

COMING UP IN MAY... THE MONACO GRAND PRIX

The Monaco Grand Prix is held on the world's most famous street circuit in the city of Monte Carlo, some 20 kms to the west of Nice. First used in the World Championship series of 1950, it returned to the calendar in 1955 and has been a fixture since that time.

Getting There

By car: from Nice or Paris directions take motorway A8 (toll payable) or main road N7 towards Monaco. The latter, though busy, leads directly to Monte Carlo. From Menton or Italy, A8 and N7 (Nice direction) also lead to Monaco.

By train/bus: Monte Carlo is also easily accessible. Frequent trains leave Paris or Marseille for Nice; those from Italy

Circuit de Monaco
Automobile Club de Monaco
23 Boulevard Albert 1er
BP 364
98000 Monaco

Tel: (33) 93 30 32 20
Fax: (33) 93 25 80 08

may entail a change at the border station of Ventimiglia. From Paris Gare de Lyon the TGV (ultra-high speed train) goes direct to Nice, from where it is about 40 minutes more to Monte Carlo. The station is a few hundred metres from the track.

By air: Nice's international airport is most convenient, the alternative being Marseille and train or hire car. There is a helicopter service from Nice airport to the Monaco heliport - but cheap it isn't!

Many of the city's major arteries are used, in part, for the race itself, so traffic is desperate during GP weekend - and remember that practice starts on Thursday. Getting in and out of the city requires the patience of a saint:



Most famous place in motor racing? Casino Square - no place for a driver to gamble!

local hotel and a hired moped make a very good compromise. Best advice is to abandon the car... Hotels, of course, abound but are expensive and virtually impossible to get into. Outlying towns, as far as Nice, are a better bet. Campsites, too, are crowded: mobile homers tend to find a spot on the outskirts and drop anchor.

Restaurants near the circuit are ten a penny, but the food isn't quite that cheap. Steer clear of the major tourist traps and the cooking is delightful, as are the Cotes-du-Rhone wines to wash it down. Or opt for seafood and rose de Provence... The place to go after dinner, if you can get near it for mechanicals, press people, and the occasional driver, is the Tip Top Bar, on the circuit on the short downhill straight from Casino Square to Mirabeau - the corner where Messrs Tambay and Brundle had that spectacular 1986 accident.

For those with more than F1 on their minds, Nice offers museums, gorgeous shops - try the pedestrianised Rue Massena - and one of the prettiest beaches you'll ever come across. No shortage of places to blow the savings in Monte Carlo, either - but a short drive out of town will uncover other boutiques and craft shops at half the price. Friday is a marvellous day to wander round the paddock, spot the famous faces, and indulge yourself over lunch! Monaco is expensive, but one of those races the F1 fan ought to go to, even if it's a once in a lifetime trip.

Being There

Monaco, all 2.07 miles/3.33 kms of it, is the classic street circuit: twisting, narrow roads, spectacular backdrops and theatre for some of F1's greatest dramas. No driver has surpassed 'Mr Monaco', five-time winner Graham

Hill, though Alain Prost is pushing hard with four wins in the Principality. Nigel Mansell has yet to win there, as has local resident Nelson Piquet - who describes it as "like riding a motor bike around your sitting room"!

A LAP OF MONACO WITH... NIGEL MANSELL

"Crossing the start-finish line in sixth, you brake hard down to third for the right-hander at Ste Devote. Here you almost touch the apex of the barrier and on this circuit we are really talking about barriers - as high as you are sitting in the car..."

"Through the corner at 90, accelerate uphill in the Montee du Beau Rivage, fifth and sixth, winding your way towards Casino Square: left, right, left again - top speed about 170 mph.

"Down from sixth to fourth, hugging the inside into the square: this corner is dangerous because you're following the barriers and two-thirds of the way round the barrier jumps out into the circuit again. Round Casino, then switching right to go over the brow, round the right-hander and accelerating downhill - one of the most spectacular places to watch because the car almost takes off here at 120 mph. It jumps from the middle of the circuit to the outside and brushes the barrier.

"Down to Mirabeau in fourth, brake hard from 150 mph; dangerous, tricky corner. Third gear, about 80 mph. Again turn in close to the inside. No barrier - just a concrete wall. Keep in third down to Station hairpin, and stand on the brakes. Then accelerate towards the sea, the difficult corner at Virage du Portier, grazing the outside barrier, up to sixth and through the tunnel, which can pose all sorts of problems and is the quickest section of the circuit.

"Then it's down to the new chicane and the waterfront complex, Tabac and the swimming pool, a section I like but find daunting. A short burst into Rascasse, braking hard into the 180-degree right-hander, then away up to Virage Antony Noghes, first to second to third and all adverse camber. The secret of a good lap at Monaco is to be at one with the car and flow. If you stay the distance, you can be making around 2,500 gear shifts - and there is no margin for error. One of my remaining ambitions is to win this race with Ferrari."

Senna makes the Brazilian flags flutter with his '89 victory



FORMULA FUN

There has been a lot happening this month in the modelling world. First of all, to answer one of the many letters I have been sent regarding specialist model car magazines, one of the best is called *Pit Road*, which retails at around £1.50 from most good model shops. *Pit Road* covers nothing but motor racing models and is packed with reviews and comments - and isn't afraid to stand on people's toes.

Another good magazine is the *Model Auto Review* which retails at around the £2.00 mark but this magazine covers a larger range of car models. If you have any other questions or need help with modelling tips please send your letters to *Prix Editions* marked for the attention of Allen Syms.

Right, on with this month's news. Firstly the Onyx range of diecast Formula One cars should now be arriving at local model shops. These are models of the 1989 cars and for the price of £7.00 they are very detailed

and come complete with driver figure and presentation box. Cars in the range include Ferrari Formula One '89 late season car, McLaren MP4/5 and Lotus 101. This is the second set of Formula One cars that Onyx have made: they also did the 1988 turbo cars but these are becoming harder to track down so get a move on and buy them whilst you can. Moving on to what's new on the Tamiya front in 1/20 scale, they have just released last year's Ferrari Formula One '89 Brazil car at around £9.99 per kit. Because of this the Hasegawa review of this version of the Ferrari has been held over until next issue so a back-to-back review can be carried out between the two versions.

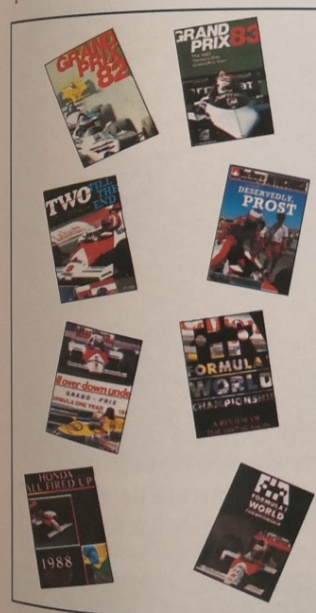
On the 1/43 front most of the 1989 grid should now be available in your local specialist shop. Tameo have just released their version of the 1989 Ligier JS 33 and due in very shortly is a very special version of the Williams FW13 complete with rain tyres as at last

year's Australian Grand Prix. This is the second model that Luca Tameo has produced with rain tyres, the first being the Lotus 100T Courtaulds Silverstone 1988, and if that kit was anything to go by the Williams should be very good: order now! Recent results have created a lot of interest in a driver by the name of J. Alesi. My tip for the top in years to come, so I've decided to start collecting his past cars, starting with his F3000 Camel EJR Reynard 89D, and then his Camel Tyrrell of 1989. Next along will be his 1990 Tyrrell which is due out in May, so start collecting now.

Allen Syms
Just Cars Anyway

- Senna collectors: 1/43 scale, Meri - Toleman TG183B, TG184; McLaren MP4/4, MP4/5; Tameo - Lotus 97T, 98T, 99T; McLaren MP4/4, MP4/5 (also with transverse gearbox); Club Japan - Lotus 99T; Heller Kits - Lotus 99T

The 1980's: not just Prost and Senna, not just Formula One politics, but so much more: the triumphant return of Lauda... three world titles for Piquet... the rise and rise of Nigel Mansell, and the heart-breaking near misses in the race for Formula One's ultimate goal... Frank Williams overcoming personal disaster to mastermind his team through a success-laden decade. All these and more can be enjoyed to the full by the winner of our monthly quiz, for which Duke Marketing are generously offering a top prize of eight videos of the Grand Prix years of the 80's. Each month one lucky winner will receive a film history to take pride of place on any shelf, with a runner-up's prize of a video and another of a model from *Just Cars Anyway!* And all you need to do is answer ten easy questions...



This month: a sideways look at 1988

1. Who made the grid in Brazil but didn't complete his parade lap? Championship points in the British Grand Prix?
2. Which team's car was designated JH23?
3. Where did Derek Warwick start his 100th Grand Prix?
4. Who picked up a \$10,000 fine in Spain?
5. At which race did Pierluigi Martini rejoin Minardi?
6. Who scored his first World
7. Which was the only race without a McLaren on pole?
8. How many times did Ayrton Senna finish second?
9. Who got on the rostrum for the first time since 1983?
10. "It's my judgement, and my life." Whose, where - and why did he say so?

Please send your answers on a postcard with your name and address to:
Formula Fun (May)
Prix Editions, Lyon Road, Windsor Avenue, Wimbledon, SW19 2SE
to reach us no later than Friday 25th May. Answers in our July issue.



PIT

FALLS

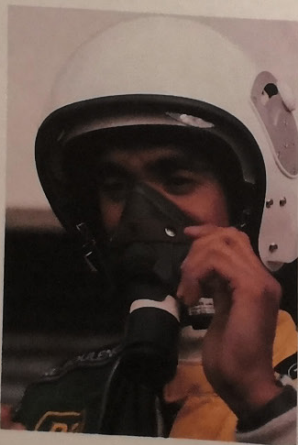
Life on the pit lane's lighter side

One traditional Japanese method of working out frustration is to beat the hell out of the nearest thing that looks like a drum. Satoru Nakajima, implicated in the famous incident with Ayrton Senna in Brazil, was clearly improvising in a determined way. They say he can get 200 words a minute out of equipment like that...



(Alamy/Pascal Bonneau)

His compatriot Aguri Suzuki, meanwhile, was finding the heady air of France and his new ESPO-Larrousse team a little hard to take. Or has he decided to take up flying instead of struggling to get the car home?



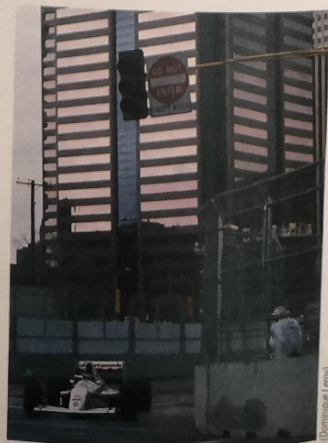
(Dominique Leroy)

No such problems for Stefan Johansson: the smiling Swede has clearly realised the best way to avoid bad news on the Onyx front is simply to cover the ears. Clever to do it in that nice matching blue, too...



(Dominique Leroy)

Phoenix on a typical Sunday. Just the odd car passing - and it was clear the rest of the world had taken the sign just a little too seriously. Imagine staging a Grand Prix in a desert - where it actually manages to rain!



(Dominique Leroy)



Now just you wait till I get back round there! That seems to be the pointed message emanating from the cockpit of a frustrated Eric Bernard's Larrousse in Brazil. Or was he telling the marshalls that was the way he really meant to be going?

All hands to the wheel - unfortunately, in Ivan Capelli's case, not the wheel a driver should have his hands on. Brazil was the second chapter of what has so far been an appalling 1990 story for Leyton House. Long way to go - and all uphill at that...



(Dominique Leroy)



(Dominique Leroy)

Thought the team was called **Footwork** Arrows???

Same venue, similar message to the one opposite. Is the current Brabham as bad as the message on the road would indicate? Let's give them the benefit of the doubt, for the time being at least...



(AP)

A.....Z OF FORMULA ONE

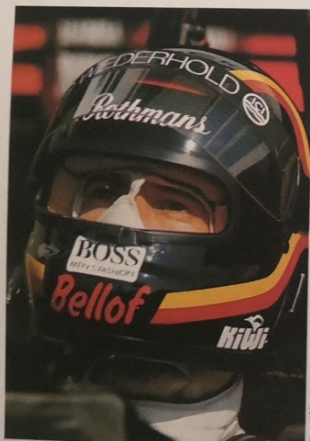
BAGHETTI, Giancarlo: Italian, born 1934. Achieved immortality by winning the first Grand Prix he ever contested in a privately-entered Ferrari. At the French GP of 1961, staged at Rheims, Baghetti outdragged Dan Gurney's Porsche to the line after the three "works" cars from Maranello had fallen by the wayside. Drove 21 Grands Prix 1961-67 but never again scaled such giddy heights.

BALESTRE, Jean-Marie: French President of the FISA, recently described by Alan Jones as the man who had done most to damage Formula 1 in the last 20 years. Autocratic, apparently immune to criticism - see his recent major interview in *Prix Editions* - and determined to go on as long as uncertain health and persistent allegations re his past permit.

BEHRA, Jean: French driver born in 1921, killed on the eve of the 1959 German GP. GP debut Switzerland 1952 (Gordini). Teams: Gordini (1952-54), Maserati (1955-58), BRM (1958), Ferrari (1959). Famous for the black-and-white chequered helmet, was twice 2nd, 3rd eight times but never won a Grand Prix.

BELL, Derek: British driver, born 1941. Grand Prix debut Italy 1968 (Ferrari). Took part in nine GPs for Ferrari, McLaren, Brabham, Surtees and Tecno 1968-1974 but scored just one point in a Surtees in 1970 in the States. Perennially popular, and probably the greatest sportscar driver in history with a matchless record at Le Mans and in the World Championship.

BELLOF, Stefan: German driver, born 1957 and killed in a sportscar race at Spa in 1985. GP debut 1984 (Tyrrell - the season in which the Tyrrells were excluded from the World Championship). Took part in 20 races, best result 4th, USA 1985. One of the great losses to motor racing in recent times, quick and fearless, immensely likeable with it.



Sorely missed - the popular and lightning-quick Stefan

BELTOISE, Jean-Pierre: French driver, born 1937, who came to four wheels from motor-cycle racing. GP debut Germany 1966 (Matra F2), drove for them through 1971 and moved to BRM 1972-74. A single, brilliant victory in the wet at Monaco in 1972 was his reward from 86 races.

BENETTON FORMULA: prominent UK-based team that began life as Toleman until that outfit was taken over by Italian knitwear phenomenon Benetton. Reputation for outstanding design by Rory Byrne, the South African designer who was with Toleman from the start. Two race wins so far, by Berger in Mexico (1986), and last year by Sandro Nannini in Japan. Came through a turbulent 1989, which saw Gordon Message succeed Peter Collins as the man in charge of the race team, to emerge with former World Champion Nelson Piquet as star driver for 1990.

BERGER, Gerhard: Austrian, born 1959. GP debut Austria 1984 (ATS); moved to Arrows 1985, Benetton 1986, Ferrari 1987-89 and now partners Senna at McLaren. Outstanding maiden victory in Mexico 1986 for Benetton, running through without a stop on Pirelli rubber. 5 GP victories, 4 for Ferrari, 5 pole positions including Phoenix 1990 - and a great deal of courage, as proven in his recovery from that appalling fire when his Ferrari crashed at Imola last year.

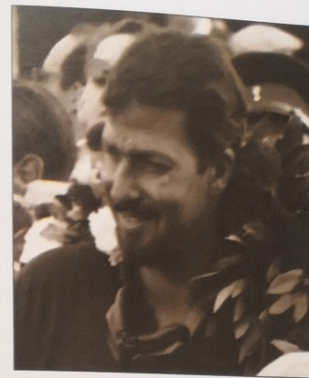


Reflecting on the switch to McLaren: Gerhard Berger

BONNIER, Joakim: Swedish driver born in 1930, killed at the 1972 Le Mans 24-Hour race. GP debut Argentina 1957 (Maserati). Teams/cars: Maserati (1957-59), BRM (1959-60), Maserati (1961-62), Cooper (1964/66/Porsche (1964/65), McLaren (1968/70/71), Honda (1968), Lotus (1969). Another man with a solitary win: Holland 1959, doubly significant as it was BRM's first in the World Championship too. Former chairman of the GPDA who contested 102 Grands Prix.

BOUTSEN, Thierry: Belgian, born 1957. GP debut Belgium 1983 (Arrows), stayed with them through 1986, spent two years with Benetton before moving in 1989 to present spot at Williams. Twice a race-winner in the wet, in Montreal and Adelaide in 1989; took a long time to notch that first victory, but still tipped by many as a future World Champion. 107 races including Brazil 1990.

BRABHAM, Jack: Australian driver and constructor, born 1926 and knighted for his services to motor sport. GP debut GB 1955 (Cooper); drove a Maserati in the British round 1956, Coopers 1957-61, then after a brief spell in Lotuses set up his own team. Became the first man ever to win the World Championship in a car of his own construction. 14 victories from 126 Grands Prix, 13 pole positions, three times World Champion 1959/60/66. His son David now in F1 - with Geoff doing rather well in the States. Since Sir Jack's retirement the Brabham team (Motor Racing Developments) has been owned by his former partner Ron Tauranac, by Bernie Ecclestone, and now by...? [see David



Jo Bonnier after the historic first win for BRM

BRM: One of the great enigmas in F1 history, a British team that became a music-hall joke before going on at last to become World Champions in 1962. 17 wins from 197 races, 11 pole positions, with the Sixties as the team's great years, thanks in large part to the driving of Graham Hill and the emergent Jackie Stewart. British Racing Motors' first car was launched in 1949 with a complicated V16 engine that was one of the major reasons for early failures. The threat of closure by industrialist controller Alfred Owen sharpened performance, and by the early Sixties Tony Rudd's engineering influence was being felt. Major names connected with the team in the Seventies included designer Tony Southgate and drivers Rodriguez and Siffert, but Monaco victory in 1972 was the last taste of glory.

Tremayne's major study of current happenings page 42]. Phoenix 1990 was the team's 360th GP, with 35 wins and 39 pole positions to its credit. Never World Champions, but helped Nelson Piquet to the drivers' crown in 1981 and 1983 in the great days of his partnership with Gordon Murray.

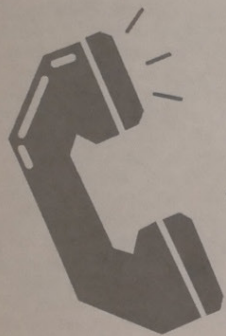
BROOKS, Tony: British driver born in 1932. GP debut GB 1956 (BRM), moved to Vanwall 1957-58, Ferrari 1959, Vanwall and Cooper again 1959/60, then BRM in 1961. 38 races yielded 6 GP victories including the historic shared Vanwall drive at Aintree with Moss in 1957, 3 pole positions, 3 fastest laps. Runner-up in the World Championship 1959.

BRUNDLE, Martin: British, born 1959. GP debut Brazil 1984 (Tyrrell), stayed with Ken through 1986 before joining Zakspeed 1987, had a one-off drive for Williams in 1988 and joined Brabham for 1989. Has twice left F1 to drive for Tom Walkinshaw in Jaguars in sportscars, becoming World Champion in 1988 and now back with TWR after the political troubles at Brabham. Denied a 2nd place at Detroit 1984 because of Tyrrell's disqualification; brave but thoughtful behind the wheel and in business life, popular and still capable of securing a major seat in Grand Prix racing.



Founder of a Formula One dynasty: the great Jack Brabham

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z



The Last Word



Non-attributable notes
from a nameless newshound...

Mr Balestre, in Brazil, informed us that the Formula One World Championship belonged to him, or should I say to the FIA. His remarks about tomato-throwing Brazilians are now well documented. What is less well known is that he rounded off this story by saying "Quite frankly I am amazed that Brazilians can even afford tomatoes at the moment". If this remark had been translated into Portuguese it is unlikely that even his Uzi-toting guards could have protected him from the wrath of the crowd.

Speaking of Uzis, FOCA's fix-it man and bon viveur Alan Woollard made the *Freudian* slip of referring to them as Ouzos. Given the unusual content of Balestre's speech one could indeed speculate that the case purportedly containing the Israeli weapon might indeed have hidden a supply of the Greek rocket fuel.

Returning to FISA for a moment, their press officer, Francesco Longanesi was quizzed in Phoenix as to why some teams were running with different numbers to those showing on the official pre-season list. His priceless

reply was that "the list is official until we change it!"

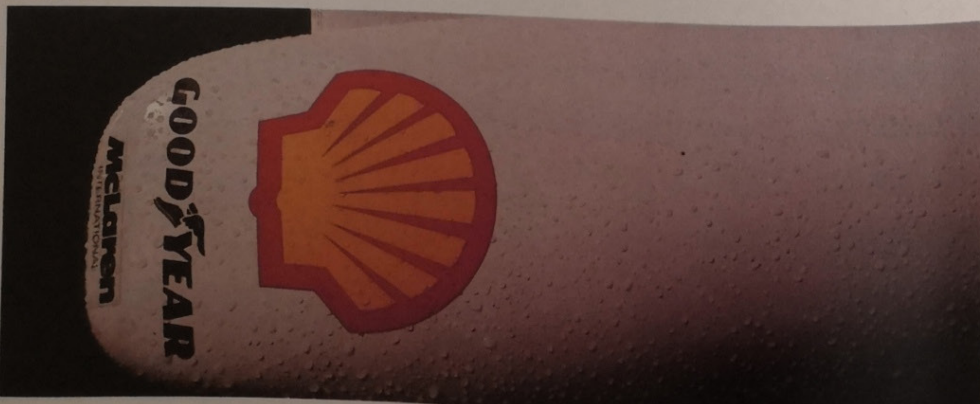
McLaren Marketing Group has pulled off something of a first by actually finding sponsors and sharpening up the image of a rival team, namely Tyrrell. But personally I think their greatest achievement was in getting a Japanese publishing company to part with a large sum of money in return for a minuscule, not to say invisible sticker on their own nose of the cars. Translated into English, it reads "Jump". Now for me, jump has always been slang for something quite different. Very appropriate if you feel like me that the company has been screwed. But consider the plight of the poor Japanese photographer commissioned to take action shots of the car showing the sticker with pin sharp clarity—an even more impossible task than getting a shot of Mr. Ecclestone without sunglasses.

Virtually all the Grand Prix drivers have their own doctor or trainer in attendance at every race to ease their aches and pains, generally mother them along and make sure they are eating the right foods. Joseph Leberer

who looks after Senna and Berger was preparing a particularly revolting looking concoction of salad and pasta for his charges in Sao Paulo, laughing away to himself as he worked, so I asked him to share the joke. "My drivers, they both earn all this money but all I let them eat is this rabbit-food rubbish", he replied with a sadistic grin on his face.

The very last word is a cautionary tale of self-fulfilling prophecy. Williams PR lady, Ann Bradshaw had warned us all of the dangers of Sao Paulo life, explaining that muggers had replaced knives with Aids-infected hypodermics. Imagine her horror therefore, on finding herself caught in the crossfire between police and robbers at a petrol station. Reports of the affray are sketchy as Ann bravely threw herself to the floor of her hire car. Incidentally, this vehicle was obviously fated as its bonnet flew up in front of the windscreen while Ann, now suitably protected by a group of scribes, returned to the hotel. The offending item was ripped off and left at the side of the road and doubtless is already seeing good service as the roof of a shanty town dwelling.

Spot the sticker...



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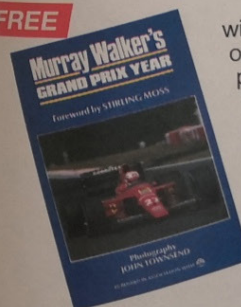
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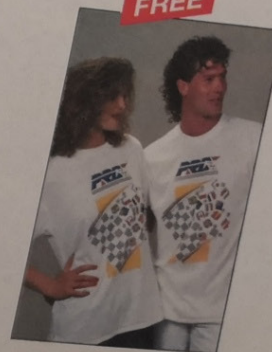


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